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ALASKA

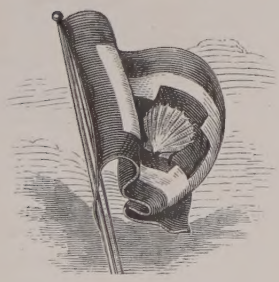
AND

ITS RESOURCES.

BY

WILLIAM H. DALL,

DIRECTOR OF THE SCIENTIFIC CORPS OF THE LATE WESTERN UNION TELEGRAPH EXPEDITION.



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To the Memory

OF

ROBERT KENNICOTT,

FIRST DIRECTOR OF THE SCIENTIFIC CORPS,

This Work is reverently Dedicated.

HE JOINED TO A NOBLE AND GENEROUS HEART AN ENTHUSIASTIC LOVE OF NATURE; DEFYING IN THE PURSUIT OF KNOWLEDGE THE MIASMA OF THE TROPICS AND THE RIGORS OF THE ARCTIC WINTER; MANFULLY ENDURING ISOLATION, SICKNESS, AND PRIVATION, AND DYING IN THE FIELD, A MARTYR TO THE CONSCIENTIOUS DISCHARGE OF HIS DUTY.

INTRODUCTION.

THE purpose of this volume has been to comprise in a small compass the most valuable part of the present knowledge of Alaska. The writer has specially endeavored to convey as much information as his scope would allow, in regard to the native inhabitants, history, and resources of the country. This end has been kept steadily in view, perhaps at the risk of dulness.

The greatest care has been taken to verify such facts as have not come under the personal observation of the writer. Toward this end every accessible work containing information in regard to the country has been consulted in the original. Where authorities have differed, the statements thought most worthy of confidence, or such as best agreed with the experience of the author, have been adopted. Many discrepancies have been reconciled, and not a few errors have been corrected. Mistakes to a certain extent are inevitable, but it is hoped that, in all important points, the statements herein made will stand the test of time and future observation. Many of the conclusions in regard to the natives may seem, to the superficial observer, unwarranted; indeed, the author found, during a second year's experience, that not a few of his earlier impressions were erroneous, and constant intercourse with the natives, during that year while isolated from other white men, enabled him to clear up many doubtful points which previous observations had left unsettled. The geographical information here recorded is, of necessity, partly approximate. With a base upon which to found future observations, it is to be hoped that accurate determination of many points will not long be delayed.

Theories and opinions have been, as far as possible, kept in the background, or, when expressed, so separated from the statements of facts, that the reader is left free to adopt or reject them from the evidence presented.

Now that the native and Russian names of places and people in Alaska are to be introduced into American literature, it is very desirable that they should be spelled as simply and uniformly as their phonetic value will allow. Great care has been taken in this respect; a slight knowledge of the Russian language having been of much assistance. It is earnestly recommended that other writers will join their efforts to promote the acceptance and use of the method of spelling adopted in this volume. It is evidently for the interest of all that simplicity and accuracy should be the only guides, and, above all, that uniformity should prevail.

It is but just that the first acknowledgment should be made to the Directors of the Western Union Telegraph Company. By the liberality and generosity of these gentlemen a grand opportunity was afforded of investigating the Natural History of this interesting region; while the operations of the Expedition were not impeded, a large amount of information was collected, for which they should receive the thanks of scientific men of all countries. In the failure of the direct objects of the Expedition, it must be no small consolation to reflect that by such liberal conduct, at an insignificant expense, results of such importance and of lasting value have been obtained.

The writer has been under many obligations, during the progress of the explorations, to Captain Charles S. Bulkley, Engineer-in-Chief of the Expedition; Captain C. M. Scammon, U. S. R. S., Chief-of-Marine; Adjutant George M. Wright; Frederick Whymper, Esq., Artist of the Expedition; and especially to Captain E. Everett Smith, of the schooner F. L. Steele, for many favors.

The writer also desires to express his sense of the favors con-

ferred and facilities offered, during the progress of this work, by the Smithsonian Institution, under the direction of Professor Joseph Henry. There is no other place where so much practical and valuable information can be found, in regard to the less known parts of North America, as in the archives of this establishment. To Professor S. F. Baird, of the Institution, the author is also under deep obligations for advice and assistance.

To the trustees and librarian of the Boston Athenæum and the Boston Public Library; to Professor Theodore Gill, and Mr. Spofford, of the Congressional Library; to Mr. S. H. Scudder, of the Boston Society of Natural History; Mr. Kalusowski, Librarian of the United States Treasury; Mr. Buynitsky, of the Treasury Department; Mr. Chew, of the Department of State; Mr. Young, of the Bureau of Statistics; Dr. C. A. Parry, of the Agricultural Bureau; Captain Patterson, Mr. Hilgard, and other officers of the United States Coast Survey; Mr. Bannister, of the Smithsonian Institution; Dr. Torrey, of the United States Assay Office; Dr. J. T. Rothrock, of the Agricultural College of Pennsylvania; Dr. Packard, of the Peabody Academy of Science; Dr. Uhler, of the Peabody Institute in Baltimore; Mr. George Gibbs; Mr. F. B. Meek; Mr. George Davidson; Dr. A. Kellogg; Professor Pœsche; R. D. Cotter; Mr. Chas. Wright; Mr. J. T. Dyer; W. H. Ennis; Baron O. de Bendeleben; Mr. Michael Lebarge; Captain Frank E. Ketchum; Mr. George R. Adams; F. H. Francis; Captain Charles Riedell; Miss S. K. Dall, and many others, he is indebted for information or assistance.

The illustrations are all from original sketches by the writer, or from the articles themselves, and owe whatever artistic merit they may possess to the pencil of Mr. H. W. Elliott. The illustrations of birds were engraved by Mr. H. H. Nichols, and the others are by Mr. John Andrew.

The map is a photo-lithograph from the original, drawn under the direction of the writer and now in the possession of the

United States Coast Survey, and was put on stone by Mr. Julius Bien, of New York.

The ethnological specimens figured are mostly from the collection of the Smithsonian Institution.

Should further details be desired, reference may be made to the works of which a list is given in the Appendix. Additional information of any kind is requested, and will be used, and full credit given, should a future opportunity be offered.

SMITHSONIAN INSTITUTION, November, 1869.

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ON the 24th of September, 1866, the clipper ship Nightingale came to anchor half a mile southeast of Egg Island, Norton Sound.

A driving storm from the north and northeast obscured the atmosphere, and covered the deck with an inch or two of half-melted snow and hail. The waves were yellow with sediment, churned up by their own violence, and the very white-caps had a sullied look which spoke of shallow water. We were drawing nineteen feet, with a rise and fall of the waves of at least twelve feet more, and the breeze was freshening. This did not leave a very large margin under the keel, and the well-known rapidity with which a north wind will diminish the depth of water in the Sound, sometimes making a difference of a fathom in the course of a few hours, added to the anxiety of our ship's officers. Our indefatigable commander, Captain Scammon, was seriously ill. Altogether, the circumstances attending our arrival in the vicinity of Redoubt St. Michael's were not propitious.

A little more than a year before, we had visited this point in the bark Golden Gate. We left a party to make the preliminary explorations, previous to deciding on the line on which it was proposed to build the international telegraph. This party was under the command of the Director of the Scientific Corps, Robert Kennicott, whose previous experience in the Hudson Bay Territory to the westward had fitted him above all others to fill the arduous post of commander of the explorations in Russian America. Several members of the Scientific Corps were of his party, and to their combined labors we looked hopefully for a solution of the problem of the identity of the Yukon River with the so-called Kwikhpák of the Russians. This identity was stoutly upheld by Mr. Kennicott, though persistently denied by many, who looked upon the so-called Colvile River, flowing into the Arctic Ocean, as the true mouth of the Yukon, while they considered the Kwikhpák as a distinct river. The question was regarded as uncertain by all. Information received from the Russians, however, soon put the matter beyond a doubt, and we looked to Mr. Kennicott and his party as the favored few who were to pass the *terra incognita* between the limit of Russian explorations and the Hudson Bay Territory, and thus complete the exploration of the Lower Yukon.

Though their equipment was not such as we could have wished, and though grave doubts prevailed as to the value of a miniature steamer, of which much had been expected, still we left all of them in the highest spirits, and with the heartiest wishes for their success, as we sailed slowly away from Stuart Island, September 17, 1865.

During the year which had passed many changes had taken place in the organization of the Expedition. No word had been received from the party even through the Russian mail, which is carried overland from St. Michael's every winter to Nushergák and thence by sea to Sitka.

Various detentions kept the vessels of the fleet lying in San Francisco Bay long after they should have reached the shores of Bering Sea, and it was only in the month of July that the Expedition finally set sail. We had been lying in Plover Bay several weeks, during which time a rumor had reached us that an exploring party had been at Grantley Harbor during the winter, and that

one member of the party had been badly frost-bitten. All were supposed to be alive and well.

Now that we had again come within reach of our friends and companions, our anxiety may be imagined. The state of the weather and our distance from St. Michael's, almost twelve miles, prevented our landing in a body. A boat with two officers was despatched late in the afternoon, but the distance and the still increasing storm forbade us to expect their return that night.

My own impatience was so great that I soon abandoned the attempt to sleep, and accompanied the officer of the deck in his inclement night-watch, pacing up and down in the rain and sleet; and I almost fancied that there was something derisive in the whistle of the wind through the rigging and insulting in the masses of slush which the swaying cordage occasionally threw in our faces.

The next morning the storm continued with little abatement. About noon we saw the steamer George S. Wright, which we knew had arrived with the commander of the expedition a day or two before, getting up steam behind the point of Stuart Island. About four o'clock in the afternoon she came out and anchored under the lee of Egg Island near us, and we soon saw a boat put off from her. Every glass was pointed at her, and every eye was strained for a glimpse of some familiar face; but the long hair and beards, the unfamiliar deer-skin dresses and hoods defied recognition.

Pressing forward to the gangway, as the first man came over the side, my first question was, "Where is Kennicott?" and the answer, "Dead, poor fellow, last May," stunned me with its sudden anguish. I stayed to hear no more, but went to my cabin as one walks in a dream.

So he was gone, that noble, impetuous, but tender-hearted man, who had been to me and many others as more than a brother! During the past two years many had had bitter controversies with him, but all felt and expressed their grief at his untimely death. He was one who made enemies as well as friends, but even enemies could not but respect the purity of motive, the open-handed generosity, the consideration, almost too great, for his subordinates, and the untiring energy and lively spirits which were the prominent characteristics of the man.

The details of his explorations and death will be found elsewhere. His body had been tenderly cared for, brought down the Yukon from the point where he died, placed in a vault at the Redoubt, and was to be taken home in charge of Mr. Charles Pease, who had been his friend from boyhood, and Mr. H. M. Bannister, both members of the Scientific Corps. This would leave the Corps without a single representative in the whole of Russian America north of Sitka.

My own plan had been, to explain the operations of the Corps during the past year to Mr. Kennicott, and if approved by him to cross to the Siberian side and obtain such information and collections as opportunity might offer, and especially to determine by the barometer the height of the different volcanoes for which Kamchatka is renowned.

Under the circumstances, however, and considering the information in regard to North American natural history and geology more important than that relating to the other continent, I resolved to remain at St. Michael's or in the valley of the Yukon during the ensuing season. I determined to use my best energies to complete the scientific exploration of the northwest extremity of the continent, as it had been planned by Mr. Kennicott, and which comprised the exploration of, —

First, the region between Fort Yukon, at the junction of the Yukon and the Porcupine, and Nuláto, the most eastern Russian post on the former river;

Second, the region between Nuláto and the sea, westward across the portage, and south by way of the Yukon to the sea; and, —

Lastly, the whole region bordering on Norton Sound and the sea to the north and south of it.

Toward this considerable collections and many observations had been made at St. Michael's, but little had been done in other parts of the country.

Captain Charles S. Bulkley, U. S. A., Engineer-in-chief of the Expedition, having signified his desire that I should succeed Mr. Kennicott as Director of the Scientific Corps, and learning that I desired to remain in the country, ordered me to act as Surgeon in general charge of the district between Bering Strait and the Yukon. I submitted my plans for the scientific operations of the coming year to him, and they met with his entire approval.

Great expedition was necessary in making my preparations.

The continued north wind began to tell on the depth of water in the Sound, and on Saturday we grounded with every swell. Luckily the bottom here is an impalpable soft mud, without any stones, otherwise the old Nightingale would have left her bones there ; and as it was, every few moments she came thumping down, with a severity that shook everything, from truck to kelson.

The following morning it cleared off, and those who were to remain took their seats in a large scow loaded with coal, which was to be towed ashore by the steamer Wilder. The Wilder was one of two small stern-wheel steamers, built in San Francisco, and brought up on the deck of the Nightingale, designed for river navigation. They were shaped much like an old-fashioned flat-iron, and were just about as valuable for the purposes required ; being unable to tow anything, or to carry any freight, while in a breeze of any strength it was no easy matter to steer them.

Sitting pensively on the larger lumps of coal, we had ample opportunity of studying the defects of our tug, and it became an interesting matter as to what we should do if she should break down before reaching shore, as seemed likely. A cold and extremely penetrating rain gave us a foretaste of the concomitants of exploration, and rendered our departure anything but romantic. Indeed, I could not help thinking that we bore much more resemblance to a party of slaves *en route* for the galleys, as Victor Hugo describes them, than to a party of young and ardent explorers, defying the powers of winter, and only anxious for an opportunity to exhibit our prowess.

We finally arrived in safety at the landing, near the Russian trading-post of St. Michael. Having pocketed some biscuit, I was provisioned, and, picking out a soft plank in a back room, I rolled myself in a blanket, and after some difficulty got to sleep. The rain continued ; the Russians were holding an orgie, with liquor obtained from the vessels ; the dogs howled nearly all night ; the roof leaked, not water, but fine volcanic gravel, with which it was covered. If this is a sample of the country, I thought, it is not prepossessing !

On rising in the morning I found, as might be expected, that

I was likely to feel for some time the effect of my new style of bed in a way that was anything but agreeable.

On Monday, the 1st of October, 1866, the Nightingale sailed for Plover Bay. All was activity on shore, preparing the Wilder and all available boats for a trip to Unalaklík, the seaboard terminus of the portage to the Yukon, at the mouth of the Unalaklík River. My friend, Mr. Whymper, the genial and excellent artist of the expedition, proposed to leave for Unalaklík on the steamer.

The work of construction and exploration had been divided. The larger number of men, and the work to be done in the region west of the Yukon, had been placed in charge of Mr. W. H. Ennis and several assistants. Here the work of exploration had been mainly finished, and construction, exclusive of putting up the wires, was to be immediately commenced.

The work of exploration and future construction, to the north and east of Nuláto on the Yukon, was intrusted to Mr. F. E. Ketchum, to whom, with Mr. Michael Lebarge, the honor of exploring the region between Nuláto and Fort Yukon had fallen after Kennicott's death.

Mr. Ketchum, who bore the title of Captain in the service of the Expedition, was thoroughly qualified for the execution of the trust committed to him. He had been eminently faithful to Mr. Kennicott during his arduous explorations, and had successfully carried out his plans after his death.

I proposed to accompany him to Nuláto, the place best suited for the prosecution of the scientific work, and as he had decided to remain for a while at St. Michael's, after consultation with him, we secured a room in the Russian quarters together.

On Tuesday the steamer, in charge of Captain E. E. Smith, with a Russian pilot, started for Unalaklík. As we were waving our congratulations, to our dismay we saw her come to a stand-still, plump on a rock at the entrance of the cove. It seemed as if her career were about to come to an ignominious conclusion, but after a good deal of labor she worked off without damage, and proceeded on her way.

We returned to our quarters, where we built a fire in the Russian stove. These stoves are a "peculiar institution," in use throughout the territory, and worthy of description. Here they

are built of fragments of basalt, the prevalent rock, and smeared inside and out with a mortar made of clay. A damper in the chimney is so arranged as to shut off all draught, and is taken out when the fire is made. After the whole has been thoroughly heated by a wood fire the coals are removed. The damper is put in, thus preventing the escape of hot air by the chimney, and without further fire this stove will warm the room for twenty-four hours. It is admirably suited to the climate and country, and its only objectionable point is the amount of room it occupies. A good deal of cooking, baking, &c., can be accomplished in a large one, and the remainder is done in a building erected for the purpose, and called the *povárnia*. The Russian name for this stove is *peéchka*, but an iron stove, such as is used in the United States, is called a *kanecla*. The foundation of the peéchka is of wood, filled in with volcanic gravel, and covered with brick or slabs of lava. In Russia they are generally built of brick entirely, and are often tiled over on the outside with painted tiles, such as are yet to be found in some of the older houses in New England.

Our beds, as in all the houses in this part of the territory, were made on a platform raised a few feet from the floor, and about seven feet wide. Mine consisted of a reindeer skin with the hair on, and with one end sewn up, so as to make a sort of bag to put the feet in ; a pillow of wild-goose and other feathers is essential to comfort ; this, with a pair of good blankets, is all that one needs in most instances. Sheets are unknown in this part of the world, and counterpanes are almost so.

Our time was well occupied in getting everything in readiness for transportation, if the steamer should return as we hoped. If, as was probable, she found ice in the Unalaklík River, she would have to go into winter quarters at once.

Meanwhile I took a careful survey of the old trading-post, or Michaelovski Redoubt, as the Russians call it.

By order of Baron Wrangell, Michael Tébenkoff, an officer of the Russian American Company, established this post in 1833. It is stated by different writers to be in latitude 63° 33′ or 63° 28′ north, and longitude 161° 55′ or 161° 44′ west of Greenwich. Few points were established by the Russians with the accuracy deemed indispensable in modern English or American surveys. It is stated by Tikhménief that, in 1836, the Unalígmuts of the

vicinity attacked the Redoubt, which was successfully defended by Kurupánoff, the commander.

It is built of spruce logs, brought by the sea from the mouths of the Yukon and Kuskoquím, which annually discharge immense quantities of driftwood. This is stacked up by the Russians in the fall, for miles along the coast north and west of the Redoubt, and is carried in winter to the fort over the ice by means of dogs and sleds. No other fuel exists on the island and adjoining shores. These are entirely destitute of wood, if we except low, scrubby willows and alders, which are found in the vicinity of water. St. Michael's is situated on a small point of the island of the same name, which puts out into the sound and forms a small cove, abounding in rocks and very shallow. Here a temporary landing-place is built out into water deep enough for loaded boats drawing five feet to come up at high tide. This is removed when winter approaches, as otherwise it would be destroyed by the ice. The shore is sandy, and affords a moderately sloping beach, on which boats may be drawn up. A few feet only from high-water mark are perpendicular banks from six to ten feet high, composed of decayed pumice and ashes, covered with a layer, about four feet thick, of clay and vegetable matter resembling peat. This forms a nearly even meadow, with numerous pools of water, which gradually ascends for a mile or more to a low hill of volcanic origin, known as the Shamán Mountain.

The fort is composed of log buildings with plank roofs, placed in the form of a square, and with the intervals filled by a palisade about ten feet high, surmounted by a *chevaux-de-frise* of pointed stakes. This is also continued round the eaves of the buildings. There are two outlying bastions, pierced for cannon and musketry, and containing a number of pieces of artillery of very small calibre and mostly very old-fashioned and rusty, except two fine brass howitzers of more modern manufacture. The principal buildings are the commander's house, — consisting of two private rooms, an armory and a counting-room, or *contórum*; — a couple of buildings used as storehouses, a bath-house, and separate houses for the married and unmarried workmen. There is a flag-staff leaning apologetically as if consciously out of place, and a gallery for the watchman, who is on duty day and night, with reliefs, and who tolls a bell on the hour stroke to notify the inmates that he is not asleep. One of

ST. MICHAEL'S REDOUBT.

the bastions is without cannon, and is used as a guard-house for refractory subjects.

Outside of the stockade are several other buildings, — a small storehouse used for furs, a large shed where boats are drawn up in winter, a blacksmith's shop, and a church. The latter is octagonal in shape, with a small dome, surmounted by a cross, and a beam bearing a bell at the side of a small porch which covers the doorway. Other small buildings are scattered about ; a sun-dial is to be found not far from the church, and a noticeable feature in the fall is the stacks of bleached driftwood, which, from a distance, look not unlike tents or bastions.

Between the point on which St. Michael's is built and the mainland, a small arm of the sea makes in, in which three fathoms may be carried until the flagstaff of the fort bears west by north. This is the best-protected anchorage, and has as much water and as good bottom as can be found much farther out.

At the southwest extremity of this arm, known as Tébenkoff Cove, we enter a narrow and tortuous channel, often not more than fifty feet wide, which separates the island of St. Michael from the mainland. This has been aptly named the Canal by the Russians, and it divides midway into two branches which are, it seems to me, equally tortuous, though they are styled the Straight and the Crooked respectively.

The mainland near St. Michael's gradually rises from the Canal and the adjacent shores into low basaltic hills, with a rugged and rocky, though not elevated coast.

The inmates of the fort — with the exception of Sérgei Stepánoff Rúsanoff, an old soldier, who commands not only this, but all the trading-posts in the District of St. Michael, under the title of Uprovalísha — may be divided into three classes: convicts, creoles, and natives.

The workmen of the Russian American Company were, almost without exception, convicts, mostly from Siberia, where the Company was originally organized. They were men convicted of such crimes as theft, incorrigible drunkenness, burglary, and even manslaughter. These men, after a continued residence in the country, naturally took to themselves wives, after the fashion of the country, since Russian subjects in the Company's employ were prohibited from legal marriage with native women.

These connections are looked upon with a different feeling from that which prevails in most communities, and these native women mix freely with the few Russian and half-breed women in the territory who have been legally married. Their children are termed creoles, and formerly were taken from their parents and educated in Sitka by the Company, in whose service they were obliged to pass a certain number of years, when they became what is called "free creoles," and were at liberty to continue in the service or not, as they liked. Many of the most distinguished officers of the Company were creoles, among them Étolin, Kushevároff, and Málakoff.

There are a few Yakúts in the service of the Company, and these, with some native workmen, who are generally of the tribe which inhabits the immediate vicinity of the post, compose the garrison.

The regular workman gets about fifty pounds of flour, a pound of tea, and three pounds of sugar, a month; his pay is about twenty cents a day. Some of the older men get thirty cents and a corresponding addition to the ration of flour. They work with little energy and spirit as a general thing, but can accomplish a great deal if roused by necessity. Small offences are punished by confinement in the guard-house, or *boofka*, and greater ones by a thrashing administered by the commander in person; those who commit considerable crimes are forced to run the gauntlet, receive one or two hundred blows with a stick, or in extreme cases are sent for trial to Sitka, or, in case of murder, to St. Petersburg.

The present Uprovalísha, Stepánoff, has been in office about four years. He is a middle-aged man of great energy and iron will, with the Russian fondness for strong liquor and with ungovernable passions in certain directions. He has a soldier's contempt for making money by small ways, a certain code of honor of his own, is generous in his own way, and seldom does a mean thing when he is sober, but nevertheless is a good deal of a brute. He will gamble and drink in the most democratic way with his workmen, and bears no malice for a black eye when received in a drunken brawl; but woe to the unfortunate who infringes discipline while he is sober, for he shall certainly receive his reward; and Stepánoff often says of his men, when speaking to an American, "You can expect nothing good of this rabble: they left Russia because they were not wanted there."

The commanders, or *bidárshiks*, of the smaller posts in the District of St. Michael are appointed by Stepánoff, who has absolute authority over them, and does not fail to let them understand it, making them row his boat, when the annual supply-ship is in port, as Alexander might have called his captive kings to do him menial service. But Stepánoff trembles before the captain of the ship or an old officer of the Company, much in the same way that his workmen cringe before him. This sort of subserviency, the fruit of a despotic government, is characteristic of the lower classes of Russians ; and to such an extent is it ingrained in their characters that it seems impossible for them to comprehend any motives of honor or truthfulness as being superior to self-interest.

The native inhabitants of this part of the coast belong to the great family of *Innuit*. The name of the tribe is *Únaleet*, and their name for the village, half a mile west of the Redoubt on the island of St. Michael, is *T'satsúmi*. The few families living there bear the local designation of *Tutsógemut*, much as we should say Bostonian or New-Yorker. The village comprises half a dozen houses and a dance-house, built in the native fashion ; that is to say, half underground, with the entrance more or less so, and the roof furnished with a square opening in the centre, for the escape of smoke and admission of light.

Diagram of Innuit Tópek.

They are built of spruce logs, without nails or pins, and are usually about twelve or fifteen feet square. The entrance is a small hole through which one must enter on hands and knees, and is usually furnished with a bear or deer skin or a piece of matting to exclude the air. Outside of this entrance is a passage-way, hardly larger, which opens under a small shed, at the surface of the ground, to protect it from the weather.

They are about eight feet high in the middle, but the eaves are rarely more than three or four feet above the ground. The floor is divided by two logs into three areas of nearly equal size, the entrance being at the end of the middle one. This portion of the floor is always the native earth, usually hardened by constant passing over it. In the middle, under the aperture in the roof, the fire is built, and here are sometimes placed a few stones. On either side the portion separated by the logs before mentioned is occupied as a place to sit and work in during the day, and as a sleeping-place during the night. The earth is usually covered with straw, or spruce branches when obtainable, and over this is laid a mat woven out of grass. Sometimes the space is raised, or a platform is built of boards, or logs hewn flat on one side. This is a work of such labor, however, that it is seldom resorted to. The beds, which generally consist of a blanket of dressed deerskin, or rabbit-skins sewed together, are rolled up and put out of the way during the day. Almost all sorts of work are done in the houses after the cold weather sets in. At this time, however, there did not appear to be any people in the village, and Captain Ketchum told me that they would not return for a week or two, being absent at Pastólik, where they were killing the beluga or white whale. A solitary old woman, perhaps of exceptional ugliness, spent her time picking berries, which were abundant near the village.

Sunday, October 7th. — A party of natives of the Máhlemut tribe arrived, in a skin boat, bringing letters from Unalaklík, saying that the boats had arrived safely at that point. The turrets or bastions of the Russian post were being fitted up for the accommodation of the officers, and winter quarters for the men were being arranged and made comfortable. The ground was well covered with snow, and we were advised to use all practicable expedition in reaching Unalaklík by water, before the formation of ice should interfere with navigation. The thermometer averaged 9° Fahrenheit during the day, and no time was to be lost.

We therefore made arrangements for starting the next day, — Captain Ketchum and myself in one boat, Mr. Westdahl our astronomer, and a party of natives, with two others.

The skin boats, in which most of the travelling by water is done,

are of three kinds. One is a large open boat, flat-bottomed and consisting of a wooden frame tied with sealskin thongs, or *rémni*, and

Bidarrá.

with the skins of the seal properly prepared, oiled, and sewed together, stretched over this frame and held in place by walrus-skin line, or *máhout*. This kind of boat is known among all the Innuit by the name *oómiak*, and is called a *bidarrá* by the Russians.

Bidárka.

Another, a smaller boat, for one man, is made essentially in the same way, but covered completely over, except a hole in which the occupant sits, and around the projecting rim of which, when at sea, he ties the edge of a waterproof shirt, called a *kamláyka* by the Russians. This is securely tied around the wrists and face also; the head being covered by a hood, so that no water can by any means penetrate to the interior of the boat. This boat is called by the natives a *kyak*, and by the Russians a *bidárka*.

The other kind is used only by the Russians, and was copied from those of the Aleutians, differing from the last only by being longer and having two or three holes; it is adapted to carry two or three people. These boats are admirably light and strong, and extremely valuable for making short journeys. It is, with persons skilled in their use, all but impossible to swamp them, and the Russians have introduced them into every part of the territory as an invaluable adjunct to exploration. They call them simply two or three holed bidárkas. They are propelled by single or double ended paddles, and attain an extraordinary speed.

Monday, 8th. — The weather being clear and fine, the wind nearly fair, we determined to put off for Unalaklík. We left St. Michael's about noon, Westdahl leading, but the wind hauling ahead we ran closer in, and left him making a long tack, which Ketchum was rather apprehensive would be unsuccessful, as it is

impossible, or almost so, to beat against the wind with one of these flat-bottomed skin boats.

About eight o'clock P. M. we put into a small rocky cove about twenty-two miles from the Redoubt. This, from two small rocky islets which protect it, is known to the Únaleets as *Kegiktówruk*, a word derived from *kikhtuk*, meaning an island. There is quite a village on the high bank back of the cove, and the inhabitants came down and helped us to haul our boat up on a sort of ways, built of round logs, held in place by large masses of rock. These are necessary, as the cove is very shallow and so full of rocks that the skin boats are very liable to be cut on them at low tide. There were no signs of the other boats.

The village is notable on account of the number of graves scattered over the plain about it, and also for the large size of the dance-house, or *casíne* as the Russians term it. This building is to be found in almost every village, and serves for a general work-room, a sort of town-hall, a steam bath-house, a caravanserai for travellers, and a meeting-house for celebrating their annual dances and festivals.

It is usually the largest and cleanest house in the village, and generally empty at night, so that travellers prefer it to one of the smaller and more dirty and crowded houses. In the present case we were quartered in it very comfortably.

We immediately sent out our teakettle, in this country always made of copper, and universally known as the *chýnik*, — tea being *chy* in the Russian, a derivative from the original Chinese *chah*.

Chy being ready, we imbibed deeply, and filling up the chynik with water we dispensed the diluted fluid to our native friends, in the bountiful tin cups provided by the Company. A small handful of broken biscuit added to the acceptability of the treat and disguised the weakness of the chy. This is the invariable and expected tribute to the hospitality of the natives from all travellers who avail themselves of the casine and other accommodations of the village ; for which the Innuit have not yet learned to charge by the night's lodging.

Appreciating the banquet, and warmed to enthusiasm by the hot water, an old blear-eyed individual seized an article something between a drum and a tambourine, and began to beat upon it with

a long elastic rod. He was joined by all the old men in the vicinity, in a dismal chorus of

Ung hi yáh, ah ha yáh, yah yah yáh, &c.,

keeping time upon his drum with an energy which showed that the vigor of his youth had not departed from him.

Four or five of the young men began to dance, posturing in different attitudes, moving their arms and legs, stamping on the floor, all in perfect accord with one another, and keeping accurate time with the drum. We were too tired, however, to appreciate this exhibition, and signified as much to the company, who finally left us to enjoy a good night's rest.

Tuesday, 9th.—We were awakened by an officious native, who put his head in, bawling at the top of his lungs that the weather was bad, very bad indeed, and that we could not get away to-day; after which pleasing piece of information he left us to our own reflections.

On getting up and going out I found that the sky was cloudy and the wind adverse, and ordering one of our Máhlemuts to put on the chynik, I went down and reported the situation, which involved our remaining a day or two where we were. Breakfast, consisting of chy, with sugar, — but of course no milk, — biscuit, and a savory piece of bacon, was duly discussed; and after a comforting pipe, we were quite ready to bear our detention with the true voyageur's philosophy.

I went out, and soon made the acquaintance, by signs and the very few native words which I had picked up, of a fine-looking young Máhlemut, who was also on his way to Unalaklík with his family. The interview commenced by his begging for a little tobacco, upon receiving which he was so delighted as to take me to his tent, a poor little affair, made of unbleached sheeting procured from the Russians. Here he introduced me by signs to his wife and child, the latter about two years old. The former was not particularly ugly or pretty, but was engaged in manufacturing tinder, which rather detracted from the neatness of her person. This tinder is made out of the fur of the rabbit, the down from the seed-vessels of the river poplar, or cotton lint obtained from the Russians; either of which is rubbed up with charcoal and water, with a very little gunpowder, and then dried. The rubbing pro-

cess was just going on, and I was thankful that etiquette did not require hand-shaking, among the Innuit of Norton Sound. The husband was a fine-looking, athletic fellow, standing about five feet five inches, with a clear brunette complexion, fine color, dark eyes, and finely arched eyebrows. The flat nose, common to all the Eskimo tribes, was not very strongly marked in him, and a pleasant smile displaying two rows of very white teeth conquered any objection I might have felt to his large mouth. The baby looked like any other baby, and was notable only from never showing any disposition to disturb the peace.

Returning after a while to the casine, I observed that the aperture in the roof was closed by a covering composed of the intestines of seals, cut down on one side, cleaned, oiled, and sewed together into a sheet, which is sufficiently translucent to admit the light while it retains the warm air.

The universal salutation of the Innuit is *Chammí! Chammí!* and as likely as not, some greasy old fellow will hug you like a brother upon a first meeting. As they are given to raising a certain kind of live-stock, this method of proceeding is not likely to suit the fastidious.

A note arrived from Westdahl by a native, one of his crew, saying that on account of rough weather he had been obliged to put into a small cove, some miles south of us, had cut his bidarrá on the rocks and wet almost everything.

Ketchum immediately despatched four men with a needle, some twisted thread made of deer sinew, called *gíla*, and a piece of seal-skin prepared for use, technically known as *luvták*. These, with some grease to rub on the seam, are all that is needed to repair any injury done to the skin of a bidarrá or bidárka.

Wednesday, 10*th*. — The water of the little cove in front of the village was white with foam when we rose in the morning: evidently we were not to get away yet. We walked over to a small bay on the other side of the point on which Kegiktówruk is situated. Here we found a cache, that is to say, a kind of small log enclosure about six feet square, covered with logs held down by heavy stones. In it were the bodies of four small hair seal, called *nérpa* by the Russians and *níksuk* by the Máhlemuts. They are covered with short, stiff hair of a greenish silvery tinge, with darker spots surrounded by dark rings, especially on the back. The young are

very beautiful, covered with long, silky, silvery hair, softer than in the adult and without the dark spots. They are about eighteen inches long, and the adults not more than four feet. The flippers have five long nails and are covered with hair like that on the body. The eye of the seal is black, very large and liquid, almost human in its expression, and the whiskers are placed like those on a cat; the bristles are perfectly transparent, three-sided and twisted, looking like glass threads, about four inches long. The blood of these seal is very black, and so is the flesh, both having a slightly disagreeable odor when fresh. They are caught in rawhide nets. There is a much larger seal (like *Phoca jubata*) which is called *maklók* by the natives; the name has been frequently applied to both species, but erroneously. The fat or blubber is about an inch and a half thick, very white and firm. The natives eat it, as well as the meat, and trade it with the Indians of the interior. The oil is used for burning, and the casine is lighted by means of four saucer-shaped dishes full of dry moss or sphagnum soaked in this oil, which give out quite as much smoke as light.

Returning, our attention was attracted by the numerous graves. These are well worth the careful attention of the ethnologist; many of them are very old. The usual fashion is to place the body, doubled up, on its side, in a box of plank hewed out of spruce logs and about four feet long; this is elevated several feet above the ground on four posts, which project above the coffin or box. The sides are often painted with red chalk, in figures of fur animals, birds, and fishes. According to the wealth of the dead man, a number of articles which belonged to him are attached to the coffin or strewed around it. Some of them have kyaks, bows and arrows, hunting implements, snowshoes or even kettles, around the grave or fastened to it; and almost invariably the wooden dish, or *kantág*, from which the deceased was accustomed to eat is hung on one of the posts.

There are many more graves than present inhabitants of the village, and the story is that the whole coast was once much more densely populated.

On arriving at the casine we met some men carrying long sticks of light-wood, and were requested to remove our bedding and other traps from the building, as the inhabitants were about to take a

bath. This we did, much to our disgust, and adjourned to one of the houses till it should be over, as a cold wind was blowing.

These baths are made by building a very hot fire in the casine, the middle part of the floor being removable, so that the earth may be exposed. Here the fire is built, and when it has subsided into coals the gut cover before mentioned is put over the smoke-hole, and the inmates proceed to bathe themselves in an unmentionable liquid, which is carefully saved for this and other purposes. Strange as it may appear, this habit was not contracted without reason, for the alkaline properties of this fluid combine with the oil with which they are smeared, and form a soapy lather, which cleanses as thoroughly as soap, which they cannot obtain, and removes the dirt, which water alone would not do. After this they wash off with water and retire to certain shelves, which are placed near the roof of the building, and repose, wrapped in a deerskin, until the lassitude produced by the bath passes away.

We waited as long as possible before entering the casine, but as evening came on we were obliged to return to it. As might be supposed, the ammoniacal odor was nearly stifling, and only the raw, blustering weather prevented us from sleeping outside.

Thursday, 11*th*. — To our great delight the sea had gone down a good deal and the wind was fair. We bundled our things into the boat, and although short-handed — two of our men having remained with Westdahl — we put out about eight o'clock, and just as we rounded the point saw the other boats, which had repaired damages, following. The character of the shore is abrupt and rocky from the Redoubt to Kegiktówruk, thence to Golsóva River, known by the two small islets or rather rocks in the vicinity, and finally around Tolstoi Point to a place called Topánika. There are very few points at which a boat, especially a skin boat, can land even in perfectly smooth weather, and in rough weather only two between Tolstoi Point and the Redoubt. The first of these is the Major's Cove, so named because it was the first point at which Major Kennicott landed, after leaving St. Michael's with his party. The other is Kegiktówruk. We passed Tolstoi Point and reached Topánika in safety. Here there is, except at high tide, a narrow, shelving beach, backed by perpendicular walls of sandstone in

bluffs from twenty to one hundred feet high. This beach continues all the way to the mouth of the Unalaklík River, the bluff growing gradually lower, until near the mouth of the river there is only a marshy plain behind the beach. As the wind was light we sent two of our men ashore with a long máhout line to "track" the boats along the beach. We were now about ten English miles from Unalaklík. The wind blowing fair and freshening, we took our men on board and made a straight course for the mouth of the river. Meanwhile it was growing dark. I had been snoozing under a deerskin for an hour or two, as the air was very cold, but finally took up the paddle to warm myself, when Ketchum's experienced ear caught the crunch of ice, and in a minute we were into it. Large cakes about four inches thick covered the surface of the water, and we all had our hands full in staving them off, as they would have sunk the boat had they nipped us. We were not far from shore; the lights at the trading-post at the mouth of the river were plainly visible. We fired several shots, but apparently without rousing any one, and were obliged to go nearly a mile north of the post to find a bit of beach sufficiently clear of ice to land upon. Having succeeded in hauling the boat above high-water mark, we stumbled amongst the driftwood with which the beach was strewn, up to the fort or trading-post, which was closed, every one being asleep. We soon roused them, however, and after a regale of tea and bread I appropriated the bed of a Russian, and sank to slumber, surrounded and overrun by not less than thirty thousand adult cockroaches and their families.

Friday, 12th. — Rose with the determination of going somewhere where there were no *terrakánoff*, as the Russians call the insects with which their apartment was infested. I obtained a tent, pitched it, and moved most of my traps out into it. Planted a flag-pole and threw the ensign of the Scientific Corps to the breeze, with the resolution to carry the blue cross and scallop, before the year was out, where no other flag had yet floated, if that were possible.

I began to provide myself with suitable clothing, such as the natives wear. First, an *artégi*, or *párka*, as the Russians call it. This is a shirt of dressed deerskin, with the hair on, coming down to the knees, and to be confined by a belt around the waist. There is no opening in the breast or back, but a hood large

enough to cover the head, which may be pushed back when not needed. This garment is trimmed around the skirt, wrists, and hood with strips of white deerskin and wolverine or wolfskin, both of which are highly prized for the purpose. Around the hood the wolfskin is broad and taken from the back of the animal, where the longest hairs are barred with white and black, which, when the hood is drawn up, makes a kind of halo about the face which is not unbecoming. When travelling, these long hairs shield the face from a side wind to a surprising extent. The parka is exceedingly warm, and the wind does not penetrate it; while in exceedingly cold weather a light one, made of fawn-skin, or *wiperotky*, as the Russians term it, may be worn with the hair turned in, inside of the usual garment, which is made of various skins, according to the fancy. The fall skin of the young deer, known as *neédress*, is the most common and perhaps the best. The skins of Parry's marmot (*Spermophilus Parryi*) and the musk-rat (*Fiber zibethicus*) are praised for their durability, and wiperotky parkies are neat and light, but do not last long. On the whole the needress is as strong, durable, and warm as any, and almost as handsome when well trimmed.

The next most important articles are the *torbassá* or Eskimo boots. These are made of the skin of the reindeer's legs, where the hair is short, smooth, and stiff. These are sewed together to make the tops of the boots, which come up nearly to the knee, where they are tied. The sole is made of sealskin, or luvták prepared in the same way as for making boats. This sole is turned over at heel and toe, and gathered like the skirt of a dress, so as to protect those parts, and brought up on each side. It is of course nearly waterproof and rather durable, but can be easily replaced in half an hour by a new one if necessary. It is wetted before being sewed, which makes the sealskin flexible, and the proper formation of the toe is aided by the teeth of the seamstress. In wearing these boots, which are made much larger than the foot, a pad of dry grass, folded to the shape of the sole, is worn under the foot. This absorbs any moisture, serves as a non-conductor, and protects the foot from the inequalities of ice or the soil. The whole furnishes a warm and comfortable covering, indispensable to winter travel. There are a pair of strings, one on each side, which are tied about the ankle, supporting it and preventing the foot from slipping about in the boot.

Deerskin breeches are worn by the natives, but are rarely needed by white men when provided with clothing of ordinary warmth and thickness.

The value of a good parka is at present about six dollars. Boots and other articles are usually obtained by barter. Ten musket-balls and a few caps are the regular price for a pair of torbassá, a pair of deerskin mittens being worth from four to six balls; ornamental gloves and other articles are more or less costly, according to the amount of work and the scarcity of the article at the time. So far, the natives have not yet learned to make a well-shaped thumb to gloves and mittens, a triangular shapeless protuberance serving their needs, but they may be easily taught a better mode of manufacture.

A deer or bear skin in the raw, dry state is used as a bed, and a blanket of dressed deer or rabbit skins, in addition to a pair of woollen ones, completes the list of articles needed for winter travel, though a small pillow is a great addition to one's comfort. A deerskin is worth, at the regular price, about sixty cents.

For a number of days nothing occurred of special interest. Captain Ketchum delayed starting across the portage to the Yukon for Nuláto, as it was still doubtful whether all the small rivers were securely frozen over. I found my nights in the tent not uncomfortable, though the thermometer ranged from twenty-eight to zero of Fahrenheit. Waking one morning, I found myself so deeply snowed up that I had a good deal of difficulty in getting out of the tent. It proved to be only a drift, however. A tin dipper of water frozen the first night showed no signs of melting.

The Russian trading-post at this point is much smaller than the Redoubt. It is in rather a decayed condition, and has only two glass windows, the remainder being made of gut, as used by the natives. Glass is a rare article here.

The stockade is built after the same plan as that at St. Michael's, and encloses one barrack building, with a room for the commander, a store, cook-house, bath-house, and a shed for storing oil, &c.; it is defended by two square bastions pierced for cannon. The guns had lately been removed, and the turrets fitted up for the accommodation of our officers. They

were of the most antiquated description, and likely to do as much damage by the breech as by the muzzle.

The fort is situated on the right bank of the Unalaklík River, where it empties into Norton Sound. It is said to have been built in 1840 and 1841.

To the north are two assemblages of houses occupied by Innuit of the Káviak, Máhlemut, and Únaleet tribes during part of the year, the latter being the only permanent residents. The village was formerly situated on the left bank of the river, but, an epidemic occurring, they removed and built new houses on the north side. The remains of the old houses and the graves may be distinctly traced.

The steamer Wilder, with the assistance of several hundred natives and our own party, under the direction of Captain Smith, had been hauled up on the beach beyond the reach of the ice, and might be considered as in winter quarters.

The Captain, who was an enthusiastic and successful sportsman, gave me the first specimens I had seen of the beautiful snow-white arctic grouse (*Lagopus albus*), which may be started in coveys on all the plains around the mouth of the river.

The beach at Unalaklík is shelving and sandy, and is bounded by a ridge, on which the houses are built. Back of this ridge the land is low, and overflowed for some distance when the freshets occur in the spring; beyond this low strip, which is parallel with the beach, it rises slowly and evenly, culminating in the ridges of the Shaktólik hills, which trend in a northeast and southwesterly direction, and attain a height of about a thousand feet above the sea. Several miles north of the river they come down to the shore in high bluffs of gray sandstone. The country to the south, already mentioned, is much the same, though the hills are farther inland and attain a higher elevation. From the beach near the fort, Besborough Island may be seen standing sharply and precipitously out of the sea, about thirty miles north-northwest. Egg Island and Stuart's Island, to the southwest, are so low that it is only on a very clear day, with a faint mirage to elevate them, that they can be distinguished. Covered with snow and without trees, the easy slopes and gracefully rounded hills have an aspect of serene beauty; the effect on a calm moonlight evening is delightful.

Thursday, October 25th.—Captain Ketchum having made up his mind to an early start across the portage, we entered on the necessary preparations for our journey. Appointing Lieutenant F. M. Smith Acting Surgeon for the Unalaklík party, I divided our exceedingly insufficient supply of medicines with him. The liberal scale on which everything was purchased allowed of no excuse for the inefficiency and red tape which left fifty men for a year, in a country where nothing of the kind was obtainable, with a supply of medicines which could be packed into a Manila cigar-box.

The proposed party for Nuláto was composed of Captain Ketchum in charge of that division, Mr. Frederick Whymper the artist of the Expedition, Mr. Francis the engineer of the Wilder, Lieutenant Michael Lebarge, a constructor who may be called Scratchett, and myself. Mr. Dyer the quartermaster proposed to join us later in the season. It will doubtless be noticed that this comprised some six officers to one man, but it must be recollected that the work laid out for the coming year in our division comprehended only exploration, and that we relied on the Indians in the vicinity of Nuláto for such manual labor as we should need. The following season we expected to receive a large number of constructors, who should proceed to build the line as soon as the route was determined.

We intended to travel with dogs and sleds, the universal and only practicable mode of winter transportation in this country. The sleds, harness, and so forth, I shall take another opportunity of describing minutely, and will only state at present that the dogs are about the size of those of Newfoundland, with shorter legs, and of all colors, from white, gray, and piebald to black. They are harnessed to the sled on each side of a line, to which the traces are attached, — two and two, with a leader in front; and the usual number is either five or seven, according to the load. They will draw when in good condition about one hundred pounds apiece with the help of the driver, who seldom rides, unless over a smooth bit of ice or with an empty sled. The sleds of the Eskimo are heavy, and shod with bone sawed from the upper edge of the jaw of the bowhead whale. These bones are obtained in the vicinity of Bering Strait, and good ones are quite valuable. The remainder of the sled is made of spruce wood. They will carry from six to eight hundred pounds. The sleds

used in the interior are much lighter and differently constructed. The Eskimo sleds are suitable only for travelling over ice and the hard snow of the coast.

Saturday, 27th. — Having loaded four sleds and finding the number of dogs insufficient, we sent down to the village and procured an additional supply, seizing any stray dog whose owners were not forthcoming, and pressing him into the service. About eleven o'clock, just as we were ready to start, an old woman, howling dismally, cut the harness of one of these conscripts and let him go. He was, however, immediately secured, the old woman pacified with a small present of tobacco ; and with a salute of one gun from the fort and a volley of revolver shots from our friends we started up the Unalaklík River on the ice. We got along very well, with the usual number of small casualties, such as the loss of one or two of the vicious dogs, who gnawed their harness in two, and the breaking of the bones with which some of the sleds were shod. We proceeded until darkness and an open spot in the river arrested our progress, and we camped on the bank for the night. The atmosphere being about ten below zero, we all relished our tea, biscuit, and bacon, and the ever-grateful pipe which followed it, before retiring. No tents are used in the winter, as they become coated with ice from the breath of the sleepers and are also liable to take fire ; so, pulling our blankets over our heads, we slept very comfortably, with nothing above us except the branches of the spruce-trees and the canopy of the sky. The trees commence as soon as we get sufficiently far up the river to be out of the way of the coast winds and salt air, and are principally willows, birch, poplar, and spruce.

Sunday, 28th. — Woke to the disagreeable discovery that four of our dogs had taken advantage of the darkness to gnaw their sealskin harnesses and decamp to Unalaklík. Pushing on, literally, with only three dogs, and five hundred pounds on the sled, I found rather hard work for a beginner. At last, about noon, we arrived at the first Indian village, called Iktígalik, where we unloaded our sleds, fed our dogs, and went into an Indian house built after the Eskimo fashion and very clean and comfortable.

Iktígalik is a fishing village with a larger population in summer than in winter. On the left bank of the river, which is about six hundred feet wide, are eight or ten summer houses, built on the

bank, of split spruce logs driven into the ground, and roofed with birch bark. The door is at the end facing the river, and is an oval opening some three feet high. The houses are about twelve feet square and entirely above ground, as in summer the underground houses are full of water. Behind these houses are the caches, called *kradowói* by the Russians. They are simply small houses, about six feet square and high, elevated from six to ten feet above the ground on four upright posts. They are well roofed and are used only as storehouses for provisions, dry fish, and furs, and are thus elevated in order that dampness or field-mice may not gain access to them ; much like an old-fashioned corn-crib. Frames are also erected where the sleds, boats, and snow-shoes may be put out of the way of the dogs, who are always on the alert for any animal substance, and will eat sealskin and even tanned leather with avidity, even when moderately well fed.

On the other side of the river are two winter houses and several caches. One of these houses was the property of an old and rather wealthy Indian, as Indians go, who had been christened Amílka by the Russians. Amílka was anxious to obtain the title of *Tyone*, or chief, which is here merely a title and conveys no authority except what age and wealth may bring with it. He had been invested with the title by the explorers during the previous season, and, though an exceedingly mean old fellow, had been of some assistance to them. In the house with him were his wife, a very fine-looking Indian woman of considerable intelligence ; and a young fellow called Ingechuk by the Russians, who had a wife about four feet high, of whom he was exceedingly fond and jealous. The other occupants were an intelligent fellow known as Andrea, and his wife, an old, very ugly, but dignified and hospitable woman. On our entering, she ordered some one to clear a place, and spreading out a clean grass mat motioned to us to be seated. Without relaxing her diligent oversight of the children around her, of her work, or of a kettle that was boiling by the fire, she sent out to the cache and obtained some dried backfat of the reindeer, the greatest delicacy in this part of the world ; cutting it into pieces of uniform size, she placed it on a clean wooden dish and handed it to us, with an air of quiet dignity quite unaffected, and as elegant as that displayed by many a

civilized dame when doing the honors of a palace. No return was asked or expected, but a present of a few leaves of tobacco was received with thanks. The backfat, when toasted over the fire, has a rich nutty flavor and is extremely good.

The other house was occupied by a dirty old rascal called Matfáy, and another, equally dirty and more stupid, called Méeshka. Matfáy bore his greedy and deceitful disposition plainly impressed on his countenance, and evidently felt aggrieved that we had not honored his house with our presence, instead of sending our Máhlemuts there, who would make him no presents.

Ketchum had actually gone into his place at first, thinking, as the house was new, that it would be the cleaner of the two ; but after a glance at it had beaten a hasty retreat.

These Indians belong to a branch of the family of Tínneh, or Chippewayans, similar to those of Mackenzie River ; their tribal name is Ingalik, or, in their own language, *Kaíyuh-khatána*, or people of the lowlands. The tribe extends from the edge of the wooded district near the sea to and across the Yukon below Nuláto, on the Yukon and its affluents to the head of the delta, and across the portage to the Kuskoquím River and its branches. Many of the adults have been christened, but not Christianized, by the missionaries of the Greek Church, and are usually known by their Russian names. They retain and use among themselves, however, their original Indian names.

Monday, 29th. — After a long night's rest, woke a good deal refreshed, though rather stiff, and enjoyed our breakfast thoroughly. Francis and myself took a walk some distance up the river, finding many open places in the ice. After our return I made a few sketches of the houses and Indians, and obtained a beginning of a vocabulary of Ingalik words. These Indians all understand a little Russian, and by this means are enabled to communicate with the whites. No one in the territory understands any English. The Innuit, especially the Máhlemut dialect, is so easy to acquire that the fur-traders learn it in preference to attempting the difficult task of teaching them Russian. Very few of the Innuit understand any Russian, while almost all the Russians understand some Eskimo. On the other hand, the Indian dialect is so much harder to learn than the Russian, that the Indians pick up Russian with facility, while none of the

Russians, except an old interpreter named Teléezhik, know more than a few words of the Indian dialects.

In the afternoon Ingechuk brought us some white grouse and some fresh reindeer meat. Of the latter a delicious dish was concocted, which I will describe for the benefit of future explorers. It was invented by the members of Kennicott's party during the first year's explorations. The frozen reindeer meat was cut into small cubes about half an inch in diameter. An equal amount of backfat was treated in the same way. Hardly covered with water, this was simmered in a stewpan for nearly an hour; water, pepper, and salt being added as needed. When nearly done, a little more water was added, and the finely broken biscuit from the bottom of the bread-bag slowly stirred in, until the whole of the gravy was absorbed. This done, we sat down to enjoy a dish which would have awakened enthusiasm at the table of Lucullus. It was known among the initiated as "telegraph stew," and the mere mention of its name would no doubt touch, in the breast of any one of them, a chord of electric sympathy.

The Russian name for the reindeer is *alêné*, perhaps derived from the French. These deer are migratory, feeding on the twigs of the willow and the fine white moss, or rather lichen, which is to be found on every hillside. They frequent the hills during the summer, and are driven thence only by the mosquitoes to seek refuge in the water. In the fall and winter they prefer the more sheltered valleys, and appear on the plains in immense herds in the spring.

Tuesday, 30th. — Walked down the river, and, looking into some deserted Indian huts, obtained some exquisite green mosses and lichens which were flourishing there notwithstanding the cold weather.

A number of sleds arrived from Unalaklík, bringing a large amount of goods and provisions for transmission to Nuláto.

On the rolling plain between the summer houses and the bases of the Ulúkuk Hills I found the larch (*Larix microcarpa?*) growing sparingly to the height of twelve feet, and abundance of alders. The snow-covered sides of these symmetrical hills stood out with striking beauty against the dark clouds which formed the background of a rich crimson and purple sunset.

Wednesday, 31st. — Ketchum decided to send back all the heavy

Máhlemut sleds, and kept nine dogs to assist us in taking the goods up to Nuláto on the light Ingalik sleds. The weather, being above the freezing point, was so warm as to render the prospect of our being able to cross the Ulúkuk River on the ice rather dubious; it would have been useless to start until we could cross it, as it is only a few miles from Iktígalik. After the sleds had started for Unalaklík, we let out the dogs from an empty summer lodge where they had been confined to prevent their following their comrades down the river.

At this period of our explorations arose the famous controversy between two of our party, in regard to the relative merits of beans and rice as articles of food. However insignificant the subject, such was the earnestness and even eloquence developed on both sides, such was the array of facts brought forward to sustain the several arguments, that the interest of every one was awakened in the discussion. This lasted late into the night, and was renewed immediately the following morning. I am sorry to be obliged to record, however, that, as in many other discussions, both literary and scientific, no definite result was arrived at, although each was convinced against his will of the valuable properties of the esculent defended by his opponent.

Thursday, November 1st.—The weather was still warm and snow falling fast. We made the discovery that nine or ten of our dogs had apparently decided to hold a town meeting in Unalaklík, and had accordingly left for that place. This was exceedingly provoking, as it would render our starting impossible in the event of a sudden cold snap. I therefore proposed to Ketchum to go back to Unalaklík and get the dogs, and Francis offered to do the same thing. The decision was postponed till the next day. Ketchum, finding dry fish likely to be scarce, called on the Indians to bring out what they had to spare, and purchased it. This fish is principally salmon and some small white fish, and is dried in the sun without smoke or salt. It is the principal staple of food, under the name of *úkali*, for all travellers, both men and dogs; being very light and portable, yet full of oil; of not the most agreeable flavor, it is at least strong if not strengthening. Occasionally one does get hold of a clean, well-dried ukali, that tastes very well when broiled over the fire; though in my own case the use of it invariably produced heartburn. The ration for a dog is

one salmon weighing from a pound and a half to two pounds, or as many smaller fish as will amount to the same. They will travel on less, but the best policy is to feed your dogs well, and you may then, with proper attention, be sure that they will work well and rarely run away.

At this time Ketchum made an arrangement with Lófka, a newly arrived Indian, and Andrea, to accompany him in a proposed winter trip up the Yukon, and paid them partly in advance.

Friday, 2d. — Francis and I started at nine o'clock for Unalaklík to bring back the missing dogs. Found the walking good but wet, and we occasionally had to take to the bank. The distance is twenty-two English miles in a direct line, but at least thirty by the river, which is exceedingly tortuous. We arrived at the post at two o'clock, just in time for a glorious Russian bath and a hot cup of tea. These baths are an institution to be proud of. Every Russian trading-post in the territory is furnished with a bath-house, and once a week all the inmates avail themselves of it. As they reckon time according to Old Style in the Russian colonies, their Sunday falls on our Saturday, and as a consequence bath-day comes on Friday. The apparatus is very simple. A rude arch of loose stones, of the hardest obtainable kind, is built, and more stones piled over it, so that a fire made beneath the arch can penetrate between them. There is no chimney, but a trap-door in the roof. A large cask full of water heated for the purpose, and another of cold water, generally with ice floating in it, and a succession of benches one above the other, complete the equipment. When the stones are thoroughly heated and the smoke has all passed out, all coals are removed and the trap-door is shut; any smoke or coals remaining will make the eyes smart and the bath very uncomfortable. Each one leaves his clothing in an outer room, and on entering wets his head and throws hot water on the heated stones until as much steam is produced as he can bear. He then mounts as high on the benches as he finds comfortable, and the perspiration issues from every pore. He then takes a sort of broom or bunch of dried mint or birch twigs, with the leaves still on them, which is prepared at the proper season and called *méenik*. With this he thrashes himself until all impurities are thoroughly loosened from the skin, and finishes with a wash off in hot water and soap. Then taking a kantág, or

wooden dish, full of ice-cold water, he dashes it over himself and rushes out into the dressing-room. This last process is disagreeable to the uninitiated, but is absolutely necessary to prevent taking cold. I have known cases of acute rheumatism brought on by omitting it. The dressing-room is spread with straw and always communicates with the outer air. The temperature is often many degrees below zero; but such is the activity of the circulation, that one dresses in perfect comfort notwithstanding. A warm dressing-room would be insupportable.

These baths cannot be recommended for those with a tendency to heart disease or apoplexy, but to persons in a healthy condition the effect is delightful; rheumatic patients are frequently cured by their means, with proper precautions. One of these baths will remove all traces of extreme exertion or fatigue as if by magic, and they may be advantageously followed by a few cups of hot tea and an hour's repose.

After our bath we found to our disgust that the dogs had been sent back, thanks to the energy of Mr. Dyer, and must have passed us on the way, while making a short portage. The weather becoming disagreeable, we were soon reconciled to our disappointment, and were snugly ensconced in one of the bastions, which had been hung with reindeer skins for comfort and warmth during the severe winter, relating our experiences over the ever-grateful cup of tea, while the sleet was driving and the storm howled outside.

Saturday, 3*d*. — The weather continued warm and disagreeable. The ice was very wet and bad, and we concluded not to return to Iktígalik to-day. The village beyond Iktígalik is called Ulúkuk, and many of the Russians call the former village New Ulúkuk, as it was built since the latter, by Ulúkuk Indians, the point being a good one for the fisheries.

The mouth of the Unalaklík River is obstructed by a bar, over which at low tide there is only a few feet of water, except in a narrow and tortuous channel, which is continually changing as the river deposits fresh detritus. Inside of this bar we get two or three fathoms of water for a few miles, but the river has only a few feet in the channel, most of the summer, from the mouth to Ulúkuk. The tide-water comes up a mile or two, and from this cause it is difficult at times to procure fresh water for drinking

purposes, as the well water is disagreeably brackish. The same trouble is found at St. Michael's, where the only good water is obtained from springs on the mainland, near the shore opposite the island. There are many of these springs near the shore along the coast, and they are unfrozen all winter, the water having a temperature of 28° to 30° Fahrenheit, even when the air is several degrees below zero. Whether this is due to any latent volcanic heat cannot yet be decided, but the islands of Stuart and St. Michael, as well as the coast as far north as Tolstoi Point, are composed of basaltic lava, full of amygdaloidal cavities and crystals of olivine, and, in many places, roughly columnar in five-sided pillars.

Sunday, 4th. — In the morning a strong northeast wind was blowing, with the thermometer about 16°, and a great deal of loose snow driving about. I determined, in spite of the remonstrances of the others, to delay no longer, and, putting some biscuit and ukali in my pocket, I started alone, about eleven o'clock, for Iktígalik. The wind sweeping over the broad plains near the mouth of the river was so violent, and the sleet was so blinding, that I was unable to face it, and was obliged to go from side to side of the river diagonally. In doing this I was misled by a branch of the river, and proceeded several miles before I found out my mistake. Retracing my steps, I took the right direction, and reached the wooded part of the river, where the trees made a shelter from the force of the wind and driving snow, late in the afternoon. I found the ice rather soft and covered in many places with drifted snow, so that the travelling was very laborious. To add to my annoyances, it soon became very dark, and I had to grope my way over ice-hummocks and through snow-drifts until nearly worn out by the exertion. Passing round a bend in the river, the ice gave way under me, and I had only time to throw myself on one side, where it proved more solid, and I got off with a wetting up to my knees. Taking off my boots and socks, I wrung out the water and put them on again, when they froze immediately. Nothing but the want of an axe prevented my camping then and there; but a howling, which came evidently from no great distance, reminded me that it might not prove healthy to sleep without a fire. I trudged along, and, to my great delight, about eight o'clock, the moon rose, and I soon saw the

high caches of the village standing out against the sky. I heard no dogs, however, and on reaching the entrance of the house on the bank I found it closed with a block of wood. Climbing on to the roof and looking through the gut cover, I thought I saw a glimmer as of live coals where the fire had been. My shouts finally aroused Ingechuk, who was the only occupant. Ketchum had evidently gone, and I had my labor for my pains! Between the small stock of Russian which I had picked up, and the little Ingechuk knew, I finally managed to make out that they had left that day and gone to Ulúkuk. I made him boil the chynik, and changed my wet clothes, which were frozen so hard as to be difficult to get off; and then, after taking my tea, retired with a feeling that I had earned a good night's sleep.

Monday, 5th. — Not wishing to take another useless tramp, I prevailed on Ingechuk to take a note to Ketchum, if he was at Ulúkuk and if he wished me to join him; and feeling rather stiff, I remained in the house, writing and resting most of the day. About the middle of the afternoon, Francis arrived. He had met an Indian with a note from Ketchum, on the river, and knew that he was gone, but had kept on to Iktígalik. Soon after, Ingechuk returned with a note from Ketchum, who was on the point of starting for Nuláto, and advised us to return to Unalaklík and come up with the next brigade of sleds.

Tuesday, 6th. — Breakfasted on some fine salmon trout (*kokolimýa* of the Indians, and *kolshéh* of the Russians) which Ketchum had sent down to us. These fish, when broiled in their skins on a stick over the fire, are exceedingly fine eating, but if fried or cleaned before cooking lose much of their flavor.

Leaving some of our things with Ingechuk, to follow us the next day, we started for Unalaklík about eleven, and reached it about five o'clock in the afternoon; our return created some amusement. The ice being very glairy made the travelling very disagreeable, and we were well satisfied when we came to our journey's end.

Adams, one of the original party, now justly known as the pioneers, had left for the Redoubt in a bidarrá, but had not returned; some fears were excited that he might not be able to do so until the sea ice had fully formed. Temperature varied from 15° to 20°.

For several days we remained *in statu quo*. Our time was taken up in increasing our knowledge of Russian and the Máhlemut dialect, in preparations for another attempt to cross the portage, and in reading a variety of matter provided by the kindness of some of the officers who did not remain in the country. Several evenings were pleasantly diversified by an amateur theatrical performance, aided by several violins. Many capital personal hits were made, which, being taken in good part by the victims, were productive of a great deal of merriment.

Monday, 12th. — Started for Iktígalik about ten o'clock, with two Máhlemuts, Shurúgeluk and Ichiluk by name, commonly known as Shuggy and New-Years, the latter having been hired the previous year by Mr. Kennicott on New-Year's day. We had two heavily loaded sleds of Máhlemut make, drawn by five and four dogs respectively, dogs being scarce. The party consisted, besides the two Eskimo above referred to, of Messrs. Dyer and Francis, and myself, — Mr. Francis and I, not wishing to be idle, having volunteered to assist in transporting the Nuláto goods to Ulúkuk. By making several short portages, the distance was materially reduced, and we arrived in good condition at Iktígalik about two o'clock in the afternoon.

Tuesday, 13th. — After breakfast, loaded up one Máhlemut and one light Ingalik sled and started at half past ten for Ulúkuk, which is about eleven miles from Iktígalik by several portages and the river. About half-way on a bend of the river were two roofless deserted houses, once a summer fishing village, called by the Indians *N'tsoh*. Unromantic as it may appear, the sight of these poor ruins, indicating probably a death in the midst of the primeval woods, could hardly fail to produce a touch of emotion in any mind less occupied than that of the hardy and careless voyageur. They formed a rude, half-effaced, but effective monument of human sorrow, in a country where humanity seems hardly to have taken root, existing as it does, only by a constant struggle for the necessities of life.

Pursuing our way up steep banks and down sharp declivities requiring the greatest care in the management of dogs and sleds, over the ice-bound river and the rolling plains, dotted with clumps of larch and willow, we finally struck the river at a sharp bend, just below the point where the village of Ulúkuk is situated.

Here a large number of springs exist, some of them below the bed of the river, whose waters are never frozen, an open patch being found here during the most severe winters. The water in these springs, measured by a standard thermometer of Greene's make, was not very warm, but retained a temperature of thirty-two to thirty-four degrees Fahrenheit during extremely cold weather. I counted seven springs in the gravel beach near the village, all without any ice about them; most of them continue open during the entire year, but are covered by the river during the spring freshets.

The village contains five winter houses, a small casine, and a row of high caches. It is situated on the right bank of the river, which is here about two hundred feet wide; about four miles to the eastward the Ulúkuk Hills rise to a height of about two thousand feet. At this time they were snow covered of course, but they are free from snow during the summer.

The open water in the river makes it somewhat difficult to approach the village with sleds from below, the banks, though low, being steep and covered with small trees. Snow or ice, placed upon the smooth pebbles from beneath which the springs were flowing, soon melted, though the weather was at zero. With the atmosphere at eight below zero, the temperature of one spring, which gave out beautifully clear water with a slight saline taste like bicarbonate of soda, was thirty-two degrees; another, quite tasteless, was thirty-four degrees Fahrenheit.

The water in the river, at the edge of the ice, which was about eighteen inches thick, had a temperature of thirty-one degrees. A remarkable abundance of fish frequents the vicinity of this patch of open water, especially the delicious salmon trout for which Ulúkuk is noted, and a small cyprinoid fish not elsewhere observed.

Amílka has a house in this village also, and into it we took our baggage and rested; an old Indian called Sammák roasted some trout for our evening meal, while with some fresh alêné meat and backfat Dyer concocted one of those appetizing telegraph stews previously mentioned.

Wednesday, 14*th*. — Francis and our two Eskimo started off with three sleds to bring loads from Iktígalik. Several sick Indians came to me for treatment, their own medical knowledge being confined to steam-baths and to counter-irritants in the form of

bleeding by means of a large number of small cuts and the actual cautery. They have no knowledge of the uses of the indigenous herbs of the country or of any medicines.

I purchased a fine pair of snow-shoes about five feet long for a sheath-knife, and Dyer obtained a large number of the river trout from the Indians. I cannot understand why Kane and other Arctic travellers could not preserve fresh provisions in a frozen state, for winter use. In this country immense quantities of meat and fish are so preserved without taint all the year round. Excavations are made in the earth to the depth of two or three feet, where it is usually frozen, and the contents are thus protected from the rays of the sun.

Towards evening Francis and the sleds returned with heavy loads of goods from the other village.

Thursday, 15*th*. — It being my turn to take charge of the brigade, I started with the dogs and men about half past ten, with empty sleds. Reached Iktígalik about two o'clock, and by means of a little diplomacy induced Ingechuk and Amílka to lend me their dogs, and also got hold of another sled.

Friday, 16*th*. — Rose early, and after chy peet, as the Russians call a meal of bread and tea, harnessed up the dogs, and, taking all the remaining goods, except some dog feed, started about half past eight and arrived at Ulúkuk about noon. Cached the goods and repaired sleds and harness.

News arrived from Ketchum in the afternoon, by an Indian who brought a sled and a worn-out dog from a point called Vesólia Sópka, or Cheerful Mountain. He said that Ketchum had passed that point with three sleds *en route* for Nuláto, but that the roads were very bad, the snow being deep and soft. One of our party had been trading with Lófka, who, having an ear for music, bought an accordeon, giving in exchange two dogs, one of which was supposed to be running wild in the woods. Lófka knew nothing of the use of the instrument, and it was a moot question which had the best of the bargain. The instrument having been used to play "Tramp, tramp, the boys are marching" for some four months, about twenty-four times a day, was, to say the least, not in a condition to be much injured by Indian fingering.

After waiting a day for the return of the Nuláto brigade which was due, Dyer returned to Unalaklík, leaving Francis and myself

with nothing to do but eat, drink, and sleep, which was extremely tedious, as the days were very short. We finally determined, if the brigade did not arrive the next day, we would get a few dogs together and carry a load to Vesólia Sópka. If it were a small one it would be of assistance, and anything would be better than continued idleness. A large number of Indians arrived from different quarters, and I improved the opportunity to enlarge my Ingalík vocabularies. One of them went out, and returned with three brace of beautiful ruffed grouse (*Bonasa umbellus.*) I also purchased some small fish, which were devoted to the interests of science.

Wednesday, 21st. — Heard a howling early in the morning and an outcry among the Indians, and jumped into my clothes just in time to catch a sight of Mike's pleasant face coming up the bank, with two Russians, six sleds, and nearly forty dogs behind him. A rapid interchange of news ensued, while unharnessing the dogs and putting the sleds up on the stages provided for the purpose. Mike was delighted to find that the work of carrying the goods from Unalaklík to Ulúkuk had been taken off his hands. The Russians were to go on to Unalaklík, and we should immediately proceed to Nuláto. Ketchum sent word to me to come up immediately, as my services were likely to be needed; but unfortunately he was obliged to ask Francis to wait for the next brigade, as the supply of provisions at Nuláto was exceedingly small. Nuláto, as the natives say, is emphatically a "hungry" place. We all regretted the provoking necessity which deprived us for a time of the society of our lively and energetic companion. He therefore made arrangements for returning a third time to Unalaklík with the Russians.

Thursday, 22d. — Rising early, the sleds were soon in readiness, and, buying a lot of fresh trout, for our own use and to send by the Russians to Unalaklík, we started about noon for Vesólia Sópka; our party consisting of six Indians, one man to each sled, besides Mike and myself. The road was excellent, and we did not require snow-shoes; the dogs were in good condition, and we progressed very well.

After leaving Ulúkuk, crossing the river and a belt of spruce timber of small size and about a mile in breadth, we came to open rolling land, between the river and the base of the hills.

This country is almost level, with hillocks here and there, and occasional clumps of low willows. This prairie-like plain is called a *túndra* by the Russians.

From Ulúkuk to the river at the Vesólia Sópka is about fourteen miles,* the greater part of which is over the tundra, which is occasionally intersected by small streams falling into the Ulúkuk branch of the Unalaklík River, and forming deep gullies, which, until filled with snow, are difficult to pass with loaded sleds. The dogs have sometimes to be unhitched and the sled carefully eased over the ravine and lifted up the opposite bank, — a work frequently of no small labor.

The Vesólia Sópka forms the termination of the range of the Ulúkuk Hills, but is somewhat lower and detached from the rest. It attains a height of about eight hundred feet above the surrounding plain, and has an even and beautifully rounded summit. At its base, hidden by large and very tall spruce and poplar, runs the Ulúkuk River. We crossed the stream, which is about two hundred feet wide, and soon reached a spot where the Russians are accustomed to camp, on the opposite bank, from which the Sópka (Russian for cone or peak, particularly a volcanic one) probably derived its name of Vesólia (cheerful). Near this point a small stream, known to the inhabitants as Poplar Creek, enters the river. This is an excellent locality for trapping, as the numerous fox and marten tracks testified. We boiled the chynik and partook of a cheerful meal of bacon and biscuit, and then pushed on by moonlight, over wooded hills, to an Indian summer lodge, or *barrábora*, built of spruce poles and birch bark. Here we camped, and passed a rather uncomfortable night, as the frail walls retained the smoke and admitted the cold wind. This point is about eight miles from the Sópka.

Friday, 23d. — Rose early, and after reloading the sleds and discussing chy, with accompaniments of bacon, biscuit, ukali, and molasses, we passed on over hillsides sparsely wooded with spruce and alder, through valleys, and up and down some rather bad hills, occasionally along the river on the ice. About dark we came upon some open tundra, just beyond a low marsh, known as Beaver Lake, as it is covered with water in the spring ; here a strong north wind was blowing full in our teeth, carrying the

* Unless otherwise stated, English statute miles are meant.

snow along the ground in blinding sleet. The atmosphere was six below zero. The other sleds were some distance behind, but as our sled carried the teakettle and axes, we felt pretty sure the Indians would follow, though much against their will. We struggled on until we arrived at an old camp of Ketchum's, where one tree mocked us with its inefficient attempt at shelter. We decided to camp here, no more suitable locality being within reach. By placing the sleds to windward, with a piece of cotton drill stretched around them, we managed to keep off the driving snow a little. The hot tea in our tin cups burned the hand on one side, while the keen wind gnawed it on the other. Smoking was out of the question, and we lay down, using the bacon as pillows, and watched the dogs, who, growling their disapprobation, sheltered their noses with their tails, and, more fortunate than ourselves, soon sank into unconscious slumber.

Saturday, 24th.—About four o'clock in the morning an old Indian called Iván, from Nuláto, came along with his son. They pulled their own sled, and had a few marten skins with which they were going to Unalaklik to buy oil for winter use. Shortly after, we broke camp and proceeded. About nine o'clock the sun rose, attended by three beautiful mock suns, or *parhelia*. One was nearly thirty degrees above the real sun, and there was one on each side, similar, but more brilliant. All were connected by an arch resembling a rainbow, except that it was of an orange color with a dark reddish band on the inner side, and threw out rays of light from the outer edge. About a quarter of another similar arch was reversed, touching the lower arch at the point where the upper mock sun was seen, and a cross of brilliant light was noticed at each junction of the arch with the mock suns. This beautiful exhibition continued for six hours, from sunrise to sunset, and Mike tells me they are not uncommon here in winter.

Shot a Canada jay, or whiskey jack (*Perisoreus canadensis*), with a dark brown "woolly bear" caterpillar in his mouth, just killed. Where it had come from was a mystery I do not pretend to solve, probably from beneath the snow.

We decided to camp early, as we were all very tired, and after descending a deep declivity called by the Russians *Perivilli*, we stopped on the bank of a small stream, made a good camp, enjoyed our supper, tea, and pipes, and slept soundly.

Sunday, 26th.—Off at six. Passed over the flanks of some high hills, from one of which I caught my first glimpse of the great river Yúkon, broad, smooth, and ice-bound. A natural impatience urged me forward, and after a smart tramp of several miles we arrived at the steep bank of the river. It was with a feeling akin to that which urged Balboa forward into the very waves of a newly discovered ocean, that I rushed by the dogs and down the steep declivity, forgetting everything else in the desire to be first on the ice, and to enjoy the magnificent prospect before me.

There lay a stretch of forty miles of this great, broad, snow-covered river, with broken fragments of ice-cakes glowing in the ruddy light of the setting sun; the low opposite shore, three miles away, seemed a mere black streak on the horizon. A few islands covered with dark evergreens were in sight above. Below, a faint purple tinged the snowy crests of far-off mountains, whose height, though not extreme, seemed greater from the low banks near me and the clear sky beyond. This was the river I had read and dreamed of, which had seemed as if shrouded in mystery, in spite of the tales of those who had seen it. On its banks live thousands who know neither its outlet nor its source, who look to it for food and even for clothing, and, recognizing its magnificence, call themselves proudly *men of the Yukon.*

Stolid indeed must he be, who surveys the broad expanse of the Missouri of the North for the first time without emotion. A little Innuit lad, who ran before the dogs and saw it for the first time, shouted at the sight, saying, amidst his expressions of astonishment, "It is not a river, it is a sea!" and even the Indians had no word of ridicule for him, often as they had seen it.

A half-mile above the point where we struck the river bank is a cluster of winter houses and caches, which goes by the name of Kaltág. Thither we turned our steps, a piercing northwester sweeping down the river being an effectual argument against further progress. We entered one of the houses, a large, clean, and well-constructed building, where we found a very old man known as *Kaltág Starcék* by the Russians (*starcék* meaning old man), and his wife, with another woman, busily at work on some winter clothing. They made room for us, spread some clean mats, and Mike, who was a general favorite, especially among the indigenous female population, by a present of a pair of scissors

induced the old woman to give us three or four ptarmigan, with a promise of six more on his next visit. He then proceeded with the aid of some rice to concoct a stew which did great credit to his culinary abilities.

We went out together to feed the dogs, and returning unexpectedly, I found one of the Indians investigating with his fingers the recesses of a spare chynik which contained our molasses. Such incidents are not uncommon, when travelling with the natives.

After discussing our supper and congratulating ourselves on the accomplishment of the portage without storm or accident, we turned in early, to enjoy a good night's rest and thereby prepare for an early start the next day.

Monday, 26th. — Pushed off quite early, travelling on the middle of the river, finding the ice, which seemed so even and smooth from the bank, to be broken, strewed with numerous cakes, and diversified by hummocks, over which about eighteen inches of snow had already collected. Here and there were patches of smooth ice, evidently of recent formation, and once or twice a light cloud over an opening indicated that the surface was not entirely frozen. Numerous long islands, covered with spruce, poplar, and willow, obstructed the view of the opposite shore, which is quite low, while here and there we could catch glimpses of the summits of the Káiyuh Mountains, a range of high hills to the eastward. The right bank consists of rounded bluffs following each other like waves, reaching a height of fifty to one hundred and fifty feet, caused by the bending of the strata, which are composed of layers of brown tertiary sandstones of Miocene age. The sides of these bluffs, with the ravines between them, are well wooded with spruce and birch, which often attain a considerable height. The left bank is uniformly low and densely wooded. The thermometer to-day fell to thirty-two below zero, but the air was still, and travelling was not uncomfortable. About six o'clock we reached a broad ravine, through which a small brook ran, and where an Ingalik named Álikoff had built a small house, known as Álikoff's barrábora. This is about twenty miles from Kaltág, which, I forgot to state, is about twenty-five miles from Iván's barrábora and thirty-six from Nuláto, perhaps a few miles more by the road we took.

Here we decided to camp for the night, and found the house, which was empty, rather smoky and uncomfortable.

Tuesday, 27th.— Making an early start for Nuláto, we proceeded up the river, the temperature being about twenty-eight below zero. About eleven o'clock, arrived at an open space nearly two miles long, bounded on the south by a sharp bluff known as the Shamán Mountain. Here a seam of coal had been reported, and, stopping for a moment, I ascertained that the report was correct. Reserving a careful examination for some other occasion, I started ahead of the dogs, following the old tracks on the snow, and soon left the brigade behind me. In half an hour I reached a point on the river where a party of three Russians were engaged in setting fish-weirs under the ice. An old fellow, whose head shook like that of a Chinese mandarin, informed me that the post of Nuláto was only a mile beyond. A steady walk of nearly an hour convinced me that it was nearer three miles, but I soon espied the stockade and two turrets at no great distance. Ascending the bank, I went into the enclosure, and, inquiring for the Americans, was directed to a low building on one side. On entering I was soon shaking hands with Ketchum, and with Whymper, who was already engaged in sketching.

We were congratulated on our quick trip from Ulúkuk, and exchanged items of news. The noise of the dogs was soon heard, and we were busily engaged in unloading and storing the goods, as well as unharnessing the dogs, who seemed as glad as anybody that their journey had come to a satisfactory conclusion.

CHAPTER II.

Arrival at Nulato, and introduction to the Creole bidarshik. — Description of the post and its inhabitants. — Adjacent points. — History. — The Nulato massacre and its cause. — Barnard's grave. — Daily life at Nulato. — Larriown. — Koyukun Indians. — Ingaliks. — Kurilla. — Plans for the coming season. — Examination of a coal-seam. — Nuklukahyet chief. — Christmas festivities. — New Year's and erection of the first telegraph pole. — Aurora. — Keturn of Ketchum. — Collections in Natural History. — Indian rumor. — Cannibalism. — Russian ingenuity. — Founding of Fort Kennicott. — Departure of Ketchum and Mike on their winter journey to Fort Yukon. — Arrival of our bidarra. — Trip to Wolasatux' barrabora. — Scarcity of food. — First signs of spring. — Robbing a grave. — First goose. — Indian children. — Rescue of the bidarshik. — Anecdote of Major Kennicott and erection of a monument to his memory. — Formation of alluvium. — Preparations for our journey. — Breaking up of the ice on the Yukon.

HAVING finally arrived at Nuláto, which I proposed to make my head-quarters, and having rested from the fatigue of the journey, I was introduced to Iván Pávloff, the bidárshik or commander of the trading-post. He was a short, thick-set, swarthy, low-browed man, a half-breed between a Russian and a native of Kenái, and was legally married to a full-blooded Indian woman, named Marina, the widow of a previous bidárshik, by whom he had a large family of children. He appeared to be a good-humored fellow, though the Indian clearly predominated in him. While evidently understanding nothing of the object of the collections and observations which I proposed to make, he yet assured me that I should be welcome to any information or assistance I might need. A disagreeable servility marked his intercourse with the Americans and full-blooded Russians, the latter regarding him with unconcealed contempt on account of his Indian blood, notwithstanding his responsible position. This accounted for the expression which might often be observed on his face while conversing with him. It seemed a mixture of stupidity and low cunning, as if he were apprehensive that some covert ridicule, or attempt at overreaching, lay hidden in the conversation addressed to him. He was an insatiable drinker,

and ungovernable as a mad bull when drunk, though at other times quiet and unexcitable. He was continually pestering us with requests for liquor, until I was obliged to poison all the alcohol intended for collecting purposes. Notwithstanding his faults, most of which were hereditary, he brought up his children and treated his wife as well as his light allowed him to do. He had a large proportion of generosity and hospitality in his character, was unusually free from any disposition to immorality, and was never known to sell any furs, purchased by him and belonging to the Russian American Company, to any of our party, as he might easily have done. He could not read or write, and the accounts were kept by an assistant called Yágor Ivánovich. He cherished in his heart a dislike to the Americans on account of their superior energy and intelligence, which led them to regard him with no very respectful eye. When he was drunk, the bitter and unfounded prejudices which he cherished came to the surface; otherwise we should hardly have suspected them. I have been thus careful in drawing his portrait, not because the individual is of any particular consequence, but because he is in many respects a type of the largest class of the civilized inhabitants of Russian America. They are known among the Russians as Creoles. The other inhabitants of the post of Nuláto were two Russians, the only whites beside ourselves, named Kárpoff and Paspílkoff (the *Pomóghnik*, or assistant, who kept the accounts, was a Creole, like the bidárshik); an old Yakút, named Yagórsha, who was a curiosity in himself; two half-breeds; and a few Indians; while a nearly equal number of Indian women were employed in and about the post.

The fort was a large one, two sides and a part of the third formed by buildings, the remainder a stockade, thus enclosing a large yard. On one side was a long structure, containing two rooms, which served for the bidárshik and his assistant and their families. These rooms were separated by a covered space from the rest of the building, which contained a magazine for trading-goods and furs, a store-room where fish were kept, and another, which was principally occupied by our goods. Opposite to this was another building of the same size, containing one large room, separated in the same way from a small one, in both of which workmen and their families lived. Each of them was surmounted with a

turret pierced for guns, and in one of these were two antique, rusty, and almost useless six-pounders. The third side was occupied by a low-studded building, about twenty feet long and ten wide, which we occupied; a shed, where fuel might be kept dry; the bath-house, and a shed used to cook in, and called by courtesy the *povárnia*, or kitchen. The front of the yard was closed in by a stockade about sixteen feet high, of pointed logs set upright in the ground, and was provided with a large gate. The houses were of round logs; the roofs, nearly flat and covered with earth, could be reached by means of steps provided for the purpose. The windows were all of the parchment, or seal intestines, before mentioned, and the buildings were warmed by the universal peechkas, the seams of the walls being calked with dry moss.

Interior of Fort Derábin, from above.

Directly across from the fort, which faces the river, is a low island, less than a mile long. The river is narrow here, being by exact measurement only a mile and a half wide. The latitude of the fort is nearly 64° 42′ north, and the longitude 157° 54′ west. The variation of the compass is nearly thirty-two degrees to the eastward.

A mile and a furlong east-northeast is a small creek, a raging torrent in the spring, called *Klat-kakhátne* by the Indians, literally "Stop-a-bit River." Half a mile west-southwest is the mouth of

the Nuláto River, from which the post takes its name, though it was originally called Fort Derábin, from its builder and first bidárshik. Between these two streams the land is low, gradually rising from the river into low hills, and for the most part densely wooded. A short distance from its mouth the Nuláto River

Nuláto and the Yukon from the Bluffs.

receives two streams of no great size. Its total length is about twenty miles, inclusive of windings. The opposite bank of the *Klat-kakhátne* rises abruptly into a rocky, precipitous bluff, affording a fine view down the river. Not far below the mouth of the Nuláto the river-bank rises, but not so abruptly, into bluffs

about one hundred feet high, with higher hills behind them. Neither deer nor moose are often found in this vicinity.

In 1838, Málakoff, a Creole, explored the Yukon as far north as Nuláto. Here he built a small trading-post, without a stockade, consisting of several small houses. This was occupied during the summer and fall, but in consequence of the scarcity of provisions, at the approach of winter the Russians, under Notármi the bidárshik, left it and returned to the Redoubt. On their return, in the spring, it was found that the Indians, jealous of the permanent settlement of the whites in their immediate vicinity, had destroyed it by fire. The same thing was repeated in 1839, the buildings being burned and contents carried off.

In 1841, according to Tikhménief, the historian of the Russian American Company, Derábin was sent to Nuláto and rebuilt the fort, after arranging the difficulty with the natives by means of numerous presents given to the most influential chiefs. Yet, not having benefited by previous experience, the post was composed of several detached log-houses, strongly built, but several hundred yards apart, and without a stockade or other efficient means of defence. Other buildings were added as necessity called for them, and in 1842, Lieutenant Zagóskin, I. R. N., a special explorer of the Company, arrived, and assisted at the erection of some of these.

For ten years, though frequently threatened, the little settlement escaped injury, Derábin meanwhile carrying on a lucrative traffic with the natives for furs. In the spring of 1851, Lieutenant Barnard, of H. M. S. Enterprise, arrived at Nuláto with the bidárshik, in search of information in regard to the fate of Sir John Franklin. He was a member of Captain Collinson's Expedition, and, with Mr. Adams a surgeon, and one man, had been left by the Enterprise at St. Michael's the preceding fall Being probably a blunt, straightforward Englishman, with no knowledge of Indian character and suspicion, he made the remark, in the presence of others, that he intended to "send" for the principal chief of the Koyúkun tribe of Indians, whose head-quarters were on the Koyúkuk and Kotelkákat Rivers, and who were then holding one of their annual festivals, about twenty-five miles from Nuláto. This unfortunately-worded remark was conveyed to the chief in question, through some of the Indians at the post, by a passing native.

This chief was the most wealthy and influential in that part of the country, widely known and distinguished by a remarkably large and prominent Roman nose, from which he had received a name which, literally translated, means "humpbacked nose."

He was not accustomed to be "sent" for. When the Russians desired to see him they respectfully requested the honor of his presence. His Indian pride rose at the insult, and he immediately called a council to discuss the rumor. The shamans were of course first consulted, and they unanimously declared that it boded no good to the chief in question. The council then decided that, if the report proved true, they would, with all the Indians there assembled, go together to the fort and demand satisfaction. They waited some time, and finally were about to disperse to their homes, when a single dog-sled appeared on the river.

This sled was accompanied by Iván Búlegin, a Russian, and an Indian workman of the Nuláto tribe, who had been sent up to see if any information were attainable, and if so, to bring down the Tyóne of Koyúkuk.

The ill-fated Búlegin drew his sled up on the bank, sending the Indian who accompanied him for water to boil the chynik. Sitting down on his sled to rest himself, he was approached stealthily from behind and, being struck on the head with an axe or club, was instantly killed.

The sled was dragged away and plundered; when the Nuláto Indian returned and saw what had been done, he turned to run, but the Koyúkuns called to him, saying, "Are you not one of us? We will not hurt you." Overcome by fear, he returned and unwillingly assisted in the atrocity which followed. Búlegin's body was stripped, the flesh cut in slices from the bones, and the savages, infuriated like wild animals by the sight of blood, roasted these remains and devoured them. An Indian, who noticed the reluctance with which Búlegin's companion joined in the horrid feast, crept up behind him and drove his knife up to the hilt in his neck. The fighting men present then stripped themselves of all incumbrances except their bows and arrows, and, putting on their snowshoes, set out at once for Nuláto. Less than a half-mile below the trading-post were three large winter houses, crowded with Ingaliks of the Nuláto tribe, — in all, about a hun-

dred men, women, and children. These houses were situated near the river-bank, a few rods northeast of the mouth of the Nuláto River. It being in the month of February, and an unusually warm spring, the Nuláto Indians had taken the precaution to clear away the snow from above their birch-bark canoes, forty or fifty of which were lying about. Intending to forestall retaliation for the death of Búlegin's companion, the Koyúkuns approached with the greatest quietness, not to disturb the sleeping inmates. The canoes were seized, broken up, thrust into the apertures in the roofs and the narrow underground entrances of the houses, and fired. The frightened inhabitants, wakened by the noise and crackling of the flames, endeavored vainly to force a passage through the fire. Some of the men, seizing axes, cut their way out through the wooden walls, but were mercilessly shot down by the arrows of the Koyúkuns. Many were suffocated in the smoke. A few women were taken by the victors, and one or two children were able to save themselves in the woods, through the negligence or pity of the conquerors.

A young man called Wolasátux, renowned for his skill with the bow, escaped to the mountains, eluding the vigilance of the pursuers by his swiftness of foot. All the rest were smothered or fell beneath the knives and arrows of the assailants. But little noise was made, except by the screams of the women and the shouts of the destroyers, for at that time the Indians had no guns. The slumbers of the Russians were not disturbed.

It is said that two Indian women who were employed at the fort, having risen early to boil the chyniks for the morning meal, heard and understood the cries of the victims, but, overcome by fear and anguish at the death of their kindred, stupidly shut themselves into the cook-house, and did not alarm the Russians.

The Koyúkuns next made for the trading-post, and found the bidárshik, just risen, sitting behind one of the houses. Saying to Iván, one of their tribe who had been employed at the fort as interpreter, "If you do not kill the bidárshik, we will kill you," they forced him to consent. He approached Derábin and stabbed him in the back repeatedly, so that he fell to rise no more. The Russian interpreter, a man said to have understood seven languages, happening to come out, saw the act, and turning unarmed to the Indians, upbraided them for the murder, but fell

in the doorway, pierced with seven arrows. Rushing over his prostrate body, they entered the house. Barnard was lying on his bed reading; at the sight of the hostile Indians he raised himself up to reach his gun, which hung above his head. Twice he fired, and twice the barrel was struck upwards, the balls taking effect in the ceiling. An Indian shamán — christened Larriówn by the Russians — and his brother seized the arms, and one plunged his knife into the Englishman's abdomen, so that when it was withdrawn the intestines followed it, and he fell back mortally wounded. Several shots were fired, and one struck Larriówn in the groin. Three children and their mother were killed; their father, Teléezhik, being absent in the Káviak peninsula, as interpreter, with Captain Bedford Pim.

Leaving the bidárshik's house, the Indians next attacked the *casármer*, or room where the workmen lived, where there were two Russians and several Creoles. They had barricaded the door, and being at some distance from the other house, knew nothing that had happened. One of them aimed through the window at the crowd of Indians; when the other, hoping to avoid bloodshed, advised him to fire above their heads, in hope that they would disperse. The crowd separated, but did not retreat, and only answered by a shower of arrows. The next shot, better aimed, killed one of the Indians, when a panic seemed to seize them, and they immediately retreated with their booty and prisoners to Koyúkuk. Larriówn sat in great agony in the outer room of the bidárshik's house. A Russian lay in the inner room, helpless from fever, who had been overlooked by the Indians in the excitement. His wife, an Indian woman named Maria, brought him a loaded pistol, and held him up while he fired at the shamán. His trembling hands could not direct the ball, and Larriówn dragged himself out to the river-bank. Here he found a Koyúkun woman, who had been staying at the fort, with her baby on a little sled, which she was drawing by a band over her forehead. He threw the child into the snow, and ordered her to draw him to Koyúkuk. She refused, and he stabbed her to the heart! How he finally got away, no one knows. Thus ended the Nuláto massacre.

An Ingalik, named Lófka, was sent by the Russians with a letter to the Redoubt. He placed it in his boot, fortunately, for

he was stopped on the river and searched by two Koyúkuns, who suspected his errand. Finding nothing, they let him go.

Mr. Adams, the surgeon, immediately started, with Teléezhik and a party of Russians, for Nuláto. Captain Pim, having returned from his adventurous journey frost-bitten, could not accompany him, and remained at Unalaklík.

The Russians had sewed up the wounds; but, before Mr. Adams arrived, Lieutenant Barnard was dead. It only remained for him to perform the last sad offices and to erect a cross over his grave, with the following inscription: —

LIEUTENANT J. J. BARNARD,
OF H. M. ENTERPRISE,
Killed Feb. 16, 1851,
BY THE KOÜKUK INDIANS.
F. A.

The Russian American Company, as is the wont of trading companies, never took any measures of retaliation for this massacre. Larriówn, and Iván, the murderer of the bidárshik, are frequent visitors at the fort. Presents were sent to the Koyúkun chiefs, and there the matter ended. A stockaded fort was soon built on the present site, and the graves of Barnard and Derábin lie a stone's throw behind it. The excavations where the Indian houses stood are still to be seen, and form the graves of those natives who perished by the massacre.

On the 29th of November the indefatigable Mike started again for Ulúkuk. I occupied myself with putting my instruments in order for meteorological observations. The thermometer, a standard one, registered thirty-six below zero. Our cook and principal assistant about the house, in the absence of the fairer sex, was Peetka, the son of Iván, previously mentioned as the murderer of Derábin. His father was acting as an interpreter for the Russians. In an Indian house, outside the stockade, Larriówn was domiciled with his wife and child. The appearance of this man was remarkable. A small round head and face, piercing eyes, thin scattered hair, a short pug nose (unusual in an Indian), a tremendous development of the muscles of the jaw, a very dark complexion, and a fiendish expression of countenance combined to make his appearance the reverse of attractive, even when in good humor.

His wife possessed some of these characteristics in a lesser degree, but was equally repulsive. Both of them had gained, by a long list of evil deeds, a reputation as sorcerers or shamáns, which made their influence among the Indians immense. Both of them were well acquainted with the uses of intoxicating liquors, which for some years the Koyúkuns have obtained from traders at Kotzebue Sound. This circumstance has done much to render the tribe, naturally cruel and turbulent, one of the worst in the territory. Fortunately, disease and the scarcity of food, annually increased by the use of firearms in killing reindeer, have reduced their numbers, and at present they can hardly muster over two hundred families. From increased immorality, due to the introduction of liquor, the births are few, and hardly replace the deaths. Few women have more than two children, while many have only one, a large proportion being barren. The tribe, therefore, may be regarded as on its way to extinction.

They are of the family of Tínneh, belonging, with the Ingaliks and Nowikákat Indians, to the division of Eastern Tínneh. Their dialect is closely allied to the Ingalik, hardly differing more from it than the widely separated local dialects of Ingalik differ from one another. Their principal villages are on the Kotelkákat and Kotélno Rivers, the largest being known as Kotelkákat.

The Indians living on the Yukon between Koyúkuk and Nuklúkahyét are known to the Ingaliks as Unakatána, or "far-off people," and call themselves, with most other Indians living on the river, Yukónikatána, or "men of the Yukon."

The Nuláto Ingaliks are nearly extinct. The Ingaliks living on the other side of the Yukon, between it and the Káiyuh Mountains (known as Takaítsky to the Russians), bear the name of Káiyuhkatána, or "lowland people," and the other branches of Ingaliks have similar names, while preserving their general tribal name.

The Ingaliks are, as a rule, tall, well-made, but slender. They have very long, squarely oval faces, high prominent cheek-bones, large ears, small mouths, noses, and eyes, and an unusually large lower jaw. The nose is well formed and aquiline, but small in proportion to the rest of the face. The hair is long, coarse, and black, and generally parted in the middle. But few of them

shave the crown, as is the custom among the Eskimo. Their complexion is an ashy brown, perhaps from dirt in many cases, and they seldom have much color. On the other hand, the Koyúkuns, with the same high cheek-bones and piercing eyes, have much shorter faces, more roundly oval, of a pale olive hue, and frequently arched eyebrows and a fine color. They are the most attractive in appearance of the Indians in this part of the territory, as they are the most untamable. The women especially are more attractive than those among the Ingaliks, whose square faces and ashy complexion render the latter very plain, not to say repulsive. The women do up their hair in two braids, one on each side; but among the Koyúkuns it is not uncommon to see the hair cut short, especially after a death in the family. The detached hair is tied up in a little bundle and placed in the crotch of a tree, or anywhere where it will not be disturbed by animals. Parings from the nails are treated in the same way, as they have a superstition that disease will follow the disturbance of such remains by wild animals.

The original dress of the male Koyúkuns consists of a pair of breeches of deerskin, with the moccasins, or coverings for the feet, attached, and a deerskin parka without any hood, long and pointed before and behind. At present they buy many articles of clothing from the Eskimo and from the Russians, especially for winter wear. They are fond of ornaments and gay colors, while the Ingaliks, who wear clothing much like that adopted by the Eskimo, care little for ornaments or beads. Both build houses similar to those already described, while the other tribes of the same family, to the eastward, build only temporary lodges of skins and poles, which they transport from place to place. The habits, utensils, and mode of life of the Ingaliks and Koyúkuns are very similar, and will be more fully described hereafter.

They depend for food upon the reindeer and moose, salmon and other fish, and small game, more or less, according to the resources of the locality in which they live. At Nuláto the only dependence is fish, and some small game, such as grouse and water-fowl in their seasons. There are no deer or moose at Nuláto, and food is often very scarce.

I found a constant current of cold air, with a temperature from

— 32° to — 55° Fah., entering our room by means of the cracks in the floor, which was composed of logs squared on the upper side. Needles, forks, spoons, and other articles of use and ornament followed each other into the abyss. The matter, though laughable, was also serious, as our stock of the last-named articles amounted to only one apiece. After consultation we employed Kurílla, one of the few surviving Nuláto Indians, to calk the seams with moss. Our stock of this was soon exhausted, following the spoons, and we made the best of a bad job by covering the floor thickly with straw, that again with mats, and over all nailing some old blankets. By placing a few reindeer-skins about for rugs, we managed to improve matters a good deal. Previously, one day when the freshly heated peechka was pouring out a generous supply of hot air, I tried the thermometer at the eaves, where it stood at ninety ; four feet above the floor gave a temperature of forty-five, while on the floor the mercury indicated several degrees below freezing. The walls were anything but tight, and the warm air of the room deposited its extra moisture in hoar-frost, like feathers, near the fissures.

Peetka proved very unreliable, disappearing and staying so, just when we wanted him, and Kurílla, the Indian before mentioned, was secured as a substitute. His history was romantic. Son of a wealthy and influential chief and shamán, at the time of the Nuláto massacre he was but three or four years old ; in it his father, mother, and all their family perished. The boy and his sister, a year older, were in the trading-post at the time, and escaped unharmed, from their extreme youth. Some of the Russians had taken pity on them and brought them up, until, as they grew older, they were able to earn their own living.

His sister, christened Anna, was one of the most comely Ingaliks who came under our notice. Both of them were unusually tall ; both had acquired habits of neatness and an excellent knowledge of the Russian language, from their residence in the trading-post. Anna was married to a very good kind of fellow, an Ingalik, who had accompanied us in our journey from Ulúkuk and who was named Little Sidórka, to distinguish him from another of the same name but of greater longitude.

Kurílla proved to be a faithful and intelligent fellow, and having had some experience in cooking for our parties during the previ-

ous year, was well qualified to assist in the culinary department. To be sure, our style of living was simple and unostentatious, consisting principally of fried white-fish three times a day, varied by bacon, of which we were very sparing when fish was obtainable.

Finding a blanket on the bare boards, even alleviated by a deerskin, rather uncomfortable sleeping arrangements, we purchased several large feather-beds, filled with spoils from the wild geese and ducks, and had a small mattress made from them for each one of the party. With the addition of a pillow from the same source, we felt as if we could enjoy the sleep of the just, without danger of rheumatism.

Our plans for the coming season were now discussed and approximately settled. Whymper and myself decided to ascend the Yukon together, as far as Fort Yukon, by water in the spring. Ketchum proposed, in company with Mike Lebarge, to make the same journey over the ice, with dogs and sleds, in February. Dyer was to descend the Yukon and investigate the delta. On the 4th of December the temperature was fifty-six below zero. Faint parhelia appeared. In a short walk I observed that the atmosphere seemed filled with an icy mist, small acicular crystals of ice suspended in the air. On the 7th, the weather being milder (twenty-two below zero), I decided to visit the coal seam below Nuláto before the snow should cover it. Only one dog was available; so, getting a small sled, and packing our blankets, chynik, and mess-pan upon it, with a bag for bringing some coal from the vein for trial, I started ahead, while Kurílla followed with the sled. We met Yagórsha on the way, who with many gesticulations declared that we were going to have a severe snow-storm, and that we had better turn back. I concluded to risk it, however, and we finally arrived at the Shamán Bluff, where we soon found a sheltered ravine with plenty of dry wood; spreading a blanket as an awning to keep off the snow, which came thick and fast, we built a cheerful fire and enjoyed our tea. After a good night's rest and a hearty breakfast of bacon, biscuit, and tea, I went to the end of the bluff, where the coal was situated. A thorough examination of it showed that the seam was much contorted, running out at each end completely; that the only mass of coal was in a large pocket or elbow of the contorted

seam; and that the whole deposit contained less than a ton. What there was of it was of excellent quality, hardened by heat and compression; it was enclosed on each side by thin layers of shale and the brown Miocene sandstone previously alluded to.

Filling a bag with fragments of coal and geological specimens as trophies, we started homeward. The poor dog, I am afraid, had a hard time of it, what with the soft new snow and the weight of the bag, but we arrived without detention or accident, though rather tired.

Kurílla, who was an excellent shot and an enthusiastic sportsman, liked nothing better than to spend an hour every day shooting specimens for our collection. I obtained many more than I had dared to hope for in this way, — redpolls, downy and three-toed woodpeckers, pine grosbeaks, titmice, hawk-owls, and (strange to say) a bullfinch (*Pyrrhula*), the first ever shot on the American continent. On the 11th, Mike returned from Ulúkuk with Francis, and this event, with the news that our friends brought from below, was quite a relief to the monotony of our daily life.

On the 12th, a chief arrived at the fort from Nuklúkahyét, where the Tananáh River joins the Yukon. He greeted Ketchum as an old acquaintance, and promised to have plenty of moose meat for us when we should come that way in the spring. He remained several days at the fort, and on one of them assembled a number of Indians in our room and discoursed to them at the top of his lungs for nearly two hours. I expected to see him drop from exhaustion, every minute of the last half-hour, but long practice had doubtless inured him to it, and I resigned myself, while one of the party took up a concertina and played "Tramp, tramp" by way of diversity.

The return brigade was intrusted to Scratchett, who left, with Francis, for Unalaklík on the 17th, while Mike rested his weary bones for a season.

I continued adding to my collections and vocabularies, and setting traps for foxes, who had a fashion of carrying off the bait without disturbing the trap. Iván Pávloff, however, succeeded in trapping several, of which I secured the skeletons. Whymper was busily at work on his sketches, while Mike and Ketchum

were getting ready for their proposed journey. Altogether, time did not hang very heavily on our hands.

We found the Indians to be a great nuisance in one way. They had a habit of coming in and sitting down, doing and saying nothing, but watching everything. At meal-times they seemed to count and weigh every morsel we ate, and were never backward in assisting to dispose of the remains of the meal. Occasionally we would get desperate and clean them all out; but they would drop in again, and we could do nothing but resign ourselves to the annoyance, as we did not wish to offend them. They intended no offence, doubtless, but wanted an opportunity of studying the Anglo-Saxon species of the genus *homo* in its lair.

Fish growing scarce, Kárpoff was fitted out with some trading-goods, and sent to Koyúkuk in hope that he might obtain some grouse or rabbits from the Indians of that locality.

Christmas time approaching, we joined in endeavoring to celebrate the day appropriately. Our knowledge of chemistry and the domestic arts was taxed to the utmost in the production of pies, gingerbread, and cranberry dumplings; while a piece of Ulúkuk reindeer meat, which had been kept frozen ever since our journey across the portage, performed the office of the customary "roast beef of old England," and a brace of roasted ptarmigan represented the Yankee turkeys. Green peas, tomatoes, and other preserved vegetables were produced for the occasion; and, with the company of the bidárshik and his assistant, we sat down to the best dinner ever eaten in that part of the continent. The day was enlivened by the reading of several original literary productions, and the brewing of a mild bowl of punch from a supply of old Jamaica, which we owed to the kind thoughtfulness of Mrs. Scammon. Altogether the occasion was one which will long be remembered with pleasure by those who took part in it.

The 27th of December an observation was made, which showed the day to be just three hours long. As nearly as our watches could determine, the sun rose at a quarter before eleven, and set at a quarter of two. Proposing on New-Year's day to raise the first telegraph pole in the division of the Yukon, Mike went out with Kurílla, and returned with a fine

spruce, of the orthodox dimensions, for the purpose. An Indian, with the euphonious Russian name of Squirtzoff, was employed to peel and trim it.

On the 31st we sat the Old Year out, and hailed the New with its prospect of successful explorations. We had hoped that our party might all be present on New-Year's day; but there was no sign of the expected arrival of Mr. Dyer. After breakfast we went out in a body and raised the first telegraph pole, ornamented with the flags of the United States, the Telegraph Expedition, the Masonic fraternity, and the Scientific Corps. A salute of thirty-six guns was fired,—one for each State; and the enthusiastic Kurílla was brought to the ground by the recoil of a great Russian blunderbuss, which he had undertaken to discharge.

A few days after, Iván Pávloff returned from a journey of several hundred miles with dog-sleds, bringing about five hundred marten or American sable skins.

The Russians throughout this territory compute their time according to Old Style, and hence are always eleven days behind time. They celebrated Christmas and New-Year's day on the 5th and 12th of January, respectively.

Dyer arrived on the 3d, and on the 5th Captain Ketchum started on a last visit to the Redoubt.

Strong endeavors were made to construct some sleds for Ketchum's trip, after the style of the Hudson Bay Company; but, having no patterns, much good birch was spoiled without satisfactory results.

We had entertained great expectations of seeing exhibitions of the Aurora Borealis of unusual beauty; but they were not realized. The few displays which were observed were of an insignificant character. No colored lights were noticed, and the brilliancy of the light was far below what we had anticipated. Several of these displays, however, presented phenomena which may not be uninteresting to the general reader, as showing distinctly some points not previously established in regard to the mode of appearance of the aurora under some circumstances. February 11th, 1867, an aurora was observed under the following conditions. From a gap in the hills north of Nuláto, a white light was seen to issue, early in the evening. The sky was

much overcast with cirro-stratus clouds, which were rapidly passing in a different direction from the wind at the surface of the earth, which last was from the north. The light before alluded to approached with the wind, at about half the pace of the wind, in a cloudlike shape or condition, not far from the surface of the earth. The form of this luminous cloud was in successive waves, or ripples, and resembled the rings of smoke rising from a pipe, one within another, gradually expanding. The inner or focal rings were more intense than the outer ones, and the light was more intense in some parts of the rings than in others. They advanced as the ripples do when a stone is thrown into still water, and these ripples were compressed in an oval form by the wind, the longer diameter being east and west, across the current. It showed unmistakably that the shining medium was in consistence similar to cloud or mist. From the brighter portions of the rings, light streams of the same medium occasionally dripped, and dissipated at some distance below the point whence they originated; from which it might be inferred that the more intense portion of this medium was denser than the atmosphere. No rays or streamers issued upwards from the upper edges of the rings, which were clearly defined and below the real clouds, of which the altitude seemed less than fifteen hundred feet. The hills from between which the auroral cloud had issued, and the tops of the higher trees between the fort and the hills, were dimly seen, or obscured by the lower portion of the haze, or cloud, which seemed not more than a hundred feet above the earth, as seen from the roof of the higher building. It followed the air-currents entirely; and all its motions seemed guided or controlled by them. Wavy outlines in the ripples seemed caused by the differing velocity of the air in different parts of the current. It covered the whole sky in about two hours from the time of its first appearance. As it spread and enlarged, the light became fainter. It did not give out a positive light, but had a mildly luminous appearance, like phosphorescence.*

Captain Ketchum and Mike had returned February 1st, bringing with them Captain Everett Smith, of the Wilder, and a

* These remarkable phenomena were observed, in a greater or lesser degree, in several instances, of which an account was communicated to the National Academy, at its session in September, 1869, by the writer.

good budget of news. Several miles of poles had been erected in the vicinity of Grantley Harbor and Unalaklík. Provisions, especially tea and sugar, were at a high premium. Our supply of tea had been very small, and coffee in this climate is worthless.

A point near the Klatkakhátne River was decided upon for the location of the head-quarters of the Yukon division, and a bargain was made with Paspílkoff, the shaky-headed Russian, to put up the building, which was to be of logs.

I prepared the specimens of natural history which had been obtained during the winter, for transportation to Unalaklík and the Redoubt. They filled two large boxes, many acceptable additions having been made through the kindness of my companions.

A walk with Captain Smith, near the fort, resulted in obtaining a fine specimen of the Hudson Bay titmouse (*Parus Hudsonicus*), a bird which I had not previously collected, and the first specimen of which I owe, with many other valuable birds, to his quick eye and unerring aim.

About this time a little excitement occurred, owing to a rumor, started by one of the Indian women in the fort, to the effect that Larriówn had planned the destruction of one of the proposed parties which were to ascend the Yukon. A council of inquiry proved, however, that the rumor had no more reliable foundation than a dream.

The Indians are exceedingly suspicious in the most unimportant things, and the following incident is a good illustration of it. In talking over the scarcity of provisions, some one had jokingly remarked, that, if we were driven to the wall, we should have to make soup of Paspílkoff's baby, a new addition to our population. This was repeated by one of the women, and very soon old Iván the interpreter made his appearance, saying that the Indians wished to know if we were cannibals. He added that, since the time of Búlegin's murder at Koyúkuk, there was no instance known where the Indians had eaten human flesh. After indulging in a hearty laugh, we relieved his apprehensions, which seemed to be serious, and thereafter were more guarded in our remarks.

Peetka, his son, had been very active in procuring birds for my collection, and much to my regret appeared one day with

three fingers of his left hand nearly blown off, by carelessly pulling his gun through the bushes by the muzzle. The injury was so serious that amputation seemed necessary, but by careful application of water dressings twice daily, I was enabled to preserve them, though in a stiff and useless condition. Sometime after, the little fellow brought me in a marten, one of his own trapping, the only fee for medical services I received in Russian America during two years' practice.

The details of our Yukon trip were settled, and the boatmen engaged, so that we felt a reasonable confidence in the successful result of our proposed explorations. In the mean time I occupied myself taking angles and measurements for a chart of the Yukon and the small rivers near Nuláto, in the constant addition of specimens to the collection, with the meteorological records, and the enlargement of my vocabularies.

One of the Russians took occasion one evening to express his dislike of the Americans by beating and abusing, without cause, a boy in our employ called Antóshka. Without recourse to the bidárshik, Ketchum treated him to his deserts, — a well merited thrashing. This timely protection to our Indian servants much increased our popularity among the Indians, and enforced respect from the Russian convicts employed by the Russian American Company, in a salutary manner.

Breaking the minute-hand of my watch one day, I repaired the damage by unwinding the silver thread from a violin-string and twisting a portion of it around the barrel of the broken hand. Opportunities for the exercise of ingenuity of this kind are frequent in this country, where few mechanics of any kind are to be found. The remarkable facility with which the Russian peasant can turn his hand to anything was well exemplified among the men in the fort. All of them, with the *tapór*, or short-handled Russian broad-axe, could accomplish almost any piece of carpentering, from squaring a log to building a boat or a house. Many of them could handle blacksmiths' tools, and even manufacture, from sheet copper (provided by the Russian Company), chyniks, kettles, and lamps for burning the seal oil used in winter. There are several good blacksmiths in the country, and Aleuts, Creoles, and even Indians learn the use of their tools with remarkable ease.

On the 6th of March the plans for our proposed new station were decided upon, and the exact location selected. The enclosure was to be one hundred feet by sixty-five, and to contain a barrack, officers' quarters, bath-house, cook-house, and several store-houses. Paspílkoff promised to set about the work at once, and it was agreed that the members of the party would assist him in bringing and raising the heavy timbers.

On the 11th of March, having completed his preparations, Captain Ketchum set out on his adventurous journey with Mike over the ice to Fort Yukon. It was undertaken under the most discouraging circumstances. Neither his provisions nor his dog-feed were sufficient to last during the journey of over six hundred miles. Russians and Indians alike shook their heads and declared their disbelief in his prospects of success. The snow would be soft and impassable. The dogs would run away, or give out for want of food, and die. He could not feed himself or his Indians, and all would perish of starvation. The Ulúkuk Indians who had engaged to go backed out at the last moment, and there was extreme difficulty in obtaining two men and two boys to take their place. This was finally done through the intervention of old Iván, who sent his own son Peetka, and induced the others to go. The very day was dull and cloudy, with indications of snow. For two white men to undertake such a journey, in the face of all this discouragement, through a country of which the resources were known to be very precarious, with the prospect of certain starvation if their guns did not supply them with sufficient game to feed the dogs and party, was resolute and courageous in the extreme. From this point of view the journey was unquestionably one of the most remarkable undertaken by modern explorers.

As their heavily laden sleds moved slowly away over the soft snow, we hoisted the stars and stripes, gave them three volleys from the big gun, a hearty cheer, and any number of salutes from guns and pistols. As they passed out of sight, the chances of success and failure seemed so unevenly balanced that we hardly dared to anticipate the realization of the plans which they were so bravely and energetically endeavoring to carry out.

Our party now consisted only of Messrs. Dyer, Whymper, and myself, with Scratchett the constructor, and two Indians.

On the 18th our eyes were gladdened by the appearance of old Yagórsha, with the little skin boat, purchased at Ulúkuk last fall, for which he had been sent. It came up from Ulúkuk entire. on a sled drawn by five dogs, and had sustained some slight injuries. In this boat, Mr. Whymper and myself were to ascend the Yukon after the spring freshet. Antóshka and another Indian were sent by Dyer down the Yukon to a place called *Yakúts-kalátenik*, where a three-holed bidárka was supposed to lie, which he proposed to use in descending the Yukon and pursuing his examination of the delta.

We determined, although it was not strictly in the line of our duty, to cut and erect the poles necessary to bear the line between the Nuláto post and the proposed site of our new Fort Kennicott. The distance was a few rods over a mile, and required about thirty poles. The work was done entirely by the four members of our party, except clearing away the brush and trees for twelve feet on each side, which we intrusted to one of the Russian workmen.

Dog-feed and fresh provisions giving out, I proposed to make a trip to the Káiyuh villages, and endeavor to purchase any supplies which the Indians might be able to spare. I arrived with Kurílla and the dogs at a small village of two houses, on the left bank of the river, nearly opposite Álikoff's barrabora, and being the residence of the old veteran Wolasátux. The village is known by his name. I found all the Indians away, and was obliged to take some fish out of his cache to feed the dogs with.

Wolasátux' barrabora is a well built Indian winter house, and stands near another smaller one, with two or three caches about it, on a small clearing in a dense growth of poplars and willows. These trees grow so close together, that they have reached the height of some thirty or forty feet, almost without branches, and so slender that it gives one a feeling as of standing on a flat pincushion beset with enormous needles and pins. An old man finally appeared, who sold us a few ukali and some grouse. The next morning, Kurílla went out, and in the course of his hunting met some Indians, who informed him that Antóshka had not been able to obtain any dog-feed here or at Kaltág, and that it was not improbable his dogs might be starving. Also, that all the Indians were away after deer, and that it was uncertain when they would

return. This determined me to return to Nuláto, so that Dyer might send some fish from our slender store to Antóshka, and thus prevent his journey from coming to an unfortunate conclusion. There was no prospect of buying anything where we were.

The next morning we set out for Nuláto, and found that the moist snow rendered the travelling very hard. The weather was so warm that the snow adhered in large lumps to the snowshoes, adding a weight of ten or twelve pounds to the foot at each step,

Wolasatux' barrabora in winter.

until the masses would break off by their own weight, the same process being repeated indefinitely. We were exceedingly fatigued upon our arrival, near dusk.

It was immediately determined to send Scratchett down to Kaltág with some fish for Antóshka. Our prospects of food at this time were anything but encouraging. Wherever the blame should have fallen, the fact remained, that if it had not been for the flour and fish we obtained from the Russians, we should have been in a starving condition ; while it was said, and never denied, so far as I know, that the Nightingale, on her return, carried with

her ten thousand rations. The preposterous folly of issuing food by ordinary rations to men in an arctic, or nearly arctic climate, was never more fully demonstrated. On the resources of the country as developed by the natives, who have all they can do to feed themselves, a large body of men cannot support themselves in this part of the territory, unless their time be devoted to nothing else.

On the 8th of April, Scratchett returned with a load of fresh reindeer meat, which he had obtained from the Indians, a number of whom accompanied him. Among them was Wolasátux and his foster-son Mikáishka, and Tékunka, a noted shamán and tyone among the Káiyuh Indians. The latter proved to be a very good kind of fellow; he sold us a large amount of meat, refusing the offers of the Russians, who saw his sled-load taken into our store-house with unconcealed disgust. The day had gone by when they could control the trade of that kind, and force the reluctant Indian to sell against his will his hard-earned booty for a leaf or two of tobacco and a few balls.

We paid liberally, but not extravagantly, for provisions of all kinds, and as the supply was very limited, the Russians, unwilling to raise their tariff of prices, were often obliged to go without.

The continued warm weather was melting the snow rapidly, and although we had cleaned off the roof as much as possible, still the melting ice caused a constant dripping during the day. The evening frost would put an end to it for a while, but it returned with the heat of the morning sun.

The Nuláto and other small rivers had felt the effects of the melting snow, and the ice on the edge of the Yukon, which rests on and is frozen to the beach, was covered with water from them.

Flies, to all appearance the common universal house-fly, as well as the bluebottle, had appeared in large numbers, and might be seen on the sunny side of every wall.

On the 10th I found the first fully expanded willow catkins, and the pretty red catkin of the alder. A white-winged crossbill, the first so far obtained, was shot in a grove of poplars not far from the post.

On the roof of the house I obtained a large number of small

musk-beetles, of a steel-green color and strong odor. Several other species were obtained from the stumps and mossy hillocks which began to project above the level of the snow. The field-mice were also beginning to be active, and the children about the fort eagerly scanned with their keen eyes, bow and arrow in hand, the various stumps and crevices where they might find them; when successful they flocked with their prizes to me, sure of a few beads or some other trinket to repay them for their labor.

The white ptarmigan began moulting, or rather brown feathers began to appear in their necks and on the edges of the wings, where the first change may be looked for.

While skinning a hawk-owl I discovered in the ovary an egg, nearly perfect. Kurílla, on his return from a foraging expedition, brought fine specimens of the great gray owl (*Syrnium cinereum*), which measured four feet across the wings, and the white owl (*Nyctea nivea*). The latter frequently flies by day without difficulty, and he is a sharp hunter who can approach it within gunshot, even at midday.

April 23d being a good snowy day, I took advantage of the opportunity, to visit a grave on the point, near the Nuláto River. Carefully lifting the cover, I removed the cranium, and putting it into my haversack, I returned by a roundabout way to the fort. I had long had my eye upon this gravè, and had been waiting for weather which would cover up my tracks, in order to secure the skull. The Indians are very superstitious in regard to touching anything that has belonged with a dead body, and would have been highly incensed had it become known. Therefore I took the first opportunity of packing safely away the only Ingalik cranium ever collected.

An expedition to the bluffs above Nuláto resulted in my obtaining a number of fossils, which probably indicate a Miocene age for these beds. There are very few and very poor fossils in these sandstones, notwithstanding their wide extent and great thickness.

Birds became more plentiful as spring advanced, many summer visitors arriving in April and the early part of May. The hawks and owls were already laying their eggs, and the young of the Canada jay, as I afterwards learned, were already hatched. Scratchett started for Unalaklík April 25th, with the last mails,

and on the last trip possible this season. The Russians prophesied that he would not be able to get through, and the weather gave some probability to their croakings.

The 25th of April was a great holiday, or *prásnik*, of the Russians. It was their Easter, and was a day of rejoicing for us also, as Antóshka returned from a foraging expedition on the Káiyuh River with a good load of deer meat from Tékunka. Out of our plenty we sent a haunch in to Iván Pávloff, to his great satisfaction.

The walls of Fort Kennicott already began to assume their proportions, and we frequently went up to assist Paspílkoff in the work of raising the logs to their proper places.

On the 28th old Maria died. She was an Indian woman, long domiciled with the Russians, and had been present at the Nuláto massacre.

On the following day the first goose was seen, the solitary advance-guard of the thousands to come. Strolling on the beach, I obtained a small hawk and the first snipe of the season. The weather had become exceedingly warm. Shirt-sleeves were the rule, and the little children enjoyed themselves on the broad river-beach, building houses with pebbles and making mud pies, much as their brothers and sisters do all over the world when a vacation or a holiday releases them from restraint and the mother's watchful eye. I never saw a young child punished in Russian America, except the well-grown boys of the Russian bidárshik. They behave quite as well as civilized children, and grow up with quite as much respect for their parents. An Indian baby, unless sick, never cries; and why should it? It has no one to rub soap in its eyes, and never feels the weight of the parental hand. The mother makes it a doll, if a girl, out of bits of squirrel-skin and fur. If a boy, the father builds for him a little sable-trap, a miniature cache, in which to put his shining pebbles and other childish treasures, or a tiny fish-trap, in which the mother takes care that a choice bit of ukali, a rabbit's head, or a piece of reindeer fat shall be caught in some mysterious way. As soon as they can toddle about they are instructed in the mysteries of setting snares, and the pride with which the boys or girls bring home their first grouse, or even, by great good luck, an unfortunate rabbit, is fully shared by the parents. Their dresses

are ornamented with the choicest beads; the sweet marrow or tongue of the fallen reindeer is reserved for them by the father successful in the chase. They travel hundreds of miles with the dog-sleds, and from these little children I have often obtained dozens of mice or small birds, caught near some solitary lodge far away among the mountains, which rumor had informed them I would purchase with beads or trinkets. They carried these proudly home again as their own earnings and the prize of their own industry. I always paid something for such specimens, even if quite worthless, to encourage them to perseverance, and in this way I obtained many invaluable specimens.

Scratchett arrived from Unalaklík on the 4th of May, having had a very hard journey, and getting up to his neck in water while crossing some of the small rivers, swelled with the melting snow. The scurvy had attacked the parties at Unalaklík, from the absence of fresh provisions, but was fortunately stayed in its progress by the providential advent on the Unalaklík plains of large herds of deer, of which many were killed.

On the 3d, Kurílla killed a goose, a white-cheeked brant (*B. leucoparcia*), and two ducks, — a mallard and a Golden-eye. He received the annual pound of tobacco, the perquisite of him who kills the first goose in the spring. From this time we hoped to obtain an abundance of water-fowl, which are the only support of the inhabitants of Nuláto until the freshets subside and the salmon begin to ascend the river. Curiously enough, there are no fish in these rivers which will take the hook.

On the 7th of May the first swans were seen. They are the small American species, the trumpeter not being found in this region, and very rarely visiting Fort Yukon. The geese did not arrive in large numbers until the 9th of May, ten days later than on the previous year. The commonest ducks were the pin-tail and the green-winged teal.

On the 12th of May the water came down with a rush, breaking up the ice on the Nuláto River, and flooding the ice on the Yukon. At the same time a torrent poured down the Klatkakhátne River. Iván Pávloff, having gone shooting over to the island, on his return was caught between the two currents and swept into a hole in the ice. Paspílkoff gave the alarm, and, catching up two paddles, I hurried to the beach, where Scratchett

had already launched a birch canoe. With Antóshka, he rapidly made his way among the fragments which threatened to crush the frail boat, and succeeded in extricating the Russian in safety. To his credit be it said, the act was very handsomely done. The Russians were shouting and running wildly about, like chickens when a hawk is preparing for a swoop, and were not of the slightest assistance.

A year before, the ice having broken up, a convict named Taréntoff had been to the island in a birch-bark canoe. Returning, he was nipped between the ice-cakes and was sinking, when Major Kennicott saw him from his seat on the roof of the fort, and hurried two men to his assistance, unquestionably saving his life. When the Russian had changed his clothes, he came with protestations of gratitude to his preserver, who answered, "Do not thank me, Taréntoff; thank God." The next day, while walking in the early morning on the beach near the fort, taking the angles of the mountains for his proposed map, and with thoughts perhaps intent on the long anticipated journey, then only awaiting the disappearance of the floating ice, the Major was called to his eternal home! His remains were found where he fell; struck down by disease of the heart, aggravated by exposure, privation, and anxiety. On the sad anniversary of his death we erected, on the nearest hillock not swept by the spring freshets, a cross, which was hewn out by the blacksmith Paspílkoff, and which upheld a tablet with the following inscription:—

In Memory of
ROBERT KENNICOTT,
naturalist,
who died near this place,
May 13th, 1866, *aged thirty.*

On asking Paspílkoff what he wanted for his labor in hewing out the arms of the cross, he replied, "We Russians take nothing for what we may do for the dead; we do not know when it may be our turn."

On the 12th of May the mosquitoes made their appearance, though the snow still lay on the ground in abundance. They were larger than our home mosquitoes, and very bloodthirsty. After a few days it was impossible to sleep without a net.

We had abundance to do, getting our bidarrá in order for the journey, and packing our stores into the smallest possible space, knowing by experience that every ounce counted. Collecting was not neglected; and many specimens of birds were obtained which are only summer visitors. A walk to the bluff above the Klatkakhátne River was rewarded by the discovery of a few more fossils, and some very minute land-shells, similar to, if not identical with, Eastern American and Northern European species.

I had at this time a good opportunity of observing the formation of the alluvial soil of the islands and banks of the Yukon. Two or three feet below the surface, the ground is frozen, and probably always continues so, as there are no roots of living trees below that depth. The soil is composed of distinct layers, each layer consisting of a stratum of sand, overlaid by mud, and covered with a thin sheet of vegetable matter. These layers evidently mark the annual inundations, the materials brought down settling according to their specific gravity. They varied in thickness from half an inch to three inches, but averaged about about an inch. I counted one hundred and eighty of them in one bank, exposed by the undermining and washing away of the soil by the river, leaving a perpendicular bank about ten feet high. This action of deposition and denudation is constantly going on; and so great is the amount carried out to sea by the Yukon water, that the water of Bering Sea is discolored by it for many miles, even quite out of sight of the land.

Occasionally the roots and stumps of trees might be seen exposed, in their natural position, but deep below the surface. These had evidently been broken off in some ancient flood, and finally buried under new deposits of alluvium. I even thought I detected, in the lower and older layers, indications of carbonization, or transformation into a kind of lignite, among the strata of vegetable matter.

The Russians had already put their large bidarrá in order, and, looking with contempt upon our little boat, which was shaped like a dory, about fifteen feet long and four and a half wide, asserted that we could not keep up with them; that it was impossible to row such a bag-shaped contrivance against the rapid river current; that it would not bear a sail as large as the one we had had made; and, finally, that, with such a boat, it

was useless to attempt ascending the river, for we should certainly fail. We did not fail to appreciate the consideration for our weakness and inexperience, which was indicated by such comments; and it but strengthened our determination to reach Fort Yukon at all hazards, even if the boat had to be replaced by a raft.

We had provided a mast, and Kurílla exercised his taste and ingenuity in carving an arrow, with a broad tail to which some blue cotton was attached, to serve as a fly. The square sail was composed of stout linen towelling, purchased of the Russians; and we were provided with an A-tent, and a large piece of drill, with which our Indians might make a tent for their own shelter.

Our boat was too small to admit of a rudder, and an enormous paddle for use in steering was made by Kurílla, and ornamented with bars and stripes of red ochre. We had provided several oars cut out of seasoned spruce, no harder wood being attainable, except birch, which is too brittle.

On the 16th and 18th of May we all united in erecting the poles between the Nuláto post and Fort Kennicott. Dyer had decided to take Antóshka, and a Creole called Alóshka, who understood the Eskimo dialect of the Innuit of the Yukon-mouth, serving as an interpreter as well as an assistant in paddling the three-holed bidárka in which the journey was to be made. Scratchett was to remain at Nuláto and secure logs for the buildings to be put up at Fort Kennicott after the ice had passed out of the river.

The ice on the Yukon was separated from the shore by a wide belt of water, and we hourly looked for a rise which should give it a start down stream.

On the 19th of May, about one o'clock, as Whymper and myself were sitting on the roof, we perceived a slight motion, and upon our raising a shout to that effect, the whole population of the fort was soon out on the bank, watching the slow progress of the great sheet of ice between us and the island. The previous year the ice had broken up on the 21st. The water began to rise very rapidly, and soon covered much of the beach. We watched it with a great deal of interest; but the sight was by no means as grand as we had anticipated. It passed very quietly

for a time, and finally stopped, a jam having occurred somewhere below, and the water being still too low to carry all before it.

On the 21st it began to move again; and the water had risen to the foot of an inclined plane opposite the fort-gate, where the bank is usually ascended. The Russians do not start up the river until the ice is well out of it, as the danger to skin-boats would be too great to risk.

Our necessary trading-goods and provisions amounted to nearly eight hundred pounds, which, with the men, oars, sails, and other baggage, made up nearly eighteen hundred pounds. Of this we intended to put a bag of flour and one of bread on board the large Russian boat, making about sixteen hundred and fifty pounds that our little bidarrá must carry.

On the 25th, all our preparations being completed, we took our last night's rest in the old Nuláto trading-post.

CHAPTER III.

Our departure from Nulato. — Sukaree. — Crossing in the ice. — Peculation. — Camp. — Koyukuk Sopka. — Barter on the Yukon. — Indian grave. — Ooskon. — Indian pipes. — Tohonidola. — Koyukun dress. — Catching butterflies. — Melozikakat River. — Arrival at Nowikakat. — Trading for meat. — Shamanism. — Indian theology. — Treating the sick. — Departure from Nowikakat. — Birch canoes. — Runaway from Fort Yukon. — Tozikakat River. — Nuklukahyet and the Twin Mountains. —Nuklukahyet tyone and other Indians. — Departure from Nuklukahyet. — The Ramparts and Rapids. — Moose killing. — Pass the Ramparts. — Mosquitoes. — Plains north of the Yukon. — Kutcha Kutchin camp. — Sachniti. — Arrival at Fort Yukon. — History of the fort. — Five years without bread. — Degradation of the servants of the Hudson Bay Company. — Intense heat. — Arrival of the bateaux. — The annual trade. — Tenan Kutchin Indians. — Other tribes. — Drowning of Cowley. — Red Leggins. — Arrival of Ketchum and Mike. — Missionaries and their value. — Course of the Hudson Bay Company with the Indians. — Massacre at Fort Nelson. — Indians of the Western United States. — Furs in the storehouse. — Departure from Fort Yukon. — Arrival at Nulato. — Unexpected orders. — Start for the Yukon-mouth. — Seal and beluga in the river. — Arrival at St. Michael's.

EARLY in the morning of the 26th of May we helped our companion, Mr. Dyer, to pack his baggage into the bidárka, and about seven o'clock saw him fairly started, with Antóshka and Alóshka, on their journey to the Yukon-mouth. We gave them a parting salute, and immediately placed our own boat in the water and proceeded to load her. The Russians had already finished, and were assembled at a pseudo-religious ceremonial before their departure. At eight o'clock we pushed off. Yagor and the two Russians who remained behind saluted the flotilla with several discharges of the rusty howitzer. The Russian boat took the lead, with eight oarsmen and a light freight. We followed them at a short distance. Our party was composed of Mr. Frederick Whymper and myself; Kurílla; a little Ingalik called Mikáishka, or in the Indian dialect Menohólnoi, meaning beetle, in allusion to his diminutiveness; and lastly, a Koyúkun, whose name was so remarkably long and unpronounceable, that we decided to call him Tom. All these had arrived early in the morning in single birch canoes, a large number of

which, with their owners, were to accompany us to Nuklukahyét.

The rain poured down on us and made everything wet and uncomfortable. I realized, for the first time, the size and power of the logs and fragments of ice which, seen from the banks, seemed so small and insignificant. Kurílla, whose Indian name was *Unóokuk*, had had much experience in this sort of navigation, and proved himself active, energetic, and efficient.

The boat had been hurriedly loaded, and the goods were not arranged to the best advantage. It always takes a day to get the party and boat into good working order. After pulling about six miles we felt the necessity for taking some breakfast, and, the Russians setting the example, we hauled close into the bank and boiled the chyniks. It is, of course, impossible to take or make soft bread on such a journey, as it would very soon mould. The traditional "damper" is a humbug. It is invariably heavy, and a fruitful cause of heartburn, indigestion, and consequent ill humor. Hence, in the absence of biscuit, a substitute being necessary, the Russians are accustomed to bake a large quantity of bread which, after slicing, they dry in the oven, so that, without browning, it becomes as hard as a rock. This hardness, however, immediately disappears when the *sukarée*, as the Russians call it, is immersed in hot tea; and in this respect it is preferable to biscuit, which takes a long time to soak. It is, however, more liable to break up than biscuit, when carried in a bag, and not unfrequently retains dust and grit from the mud walls of the peechka, unless very carefully dried. We had both biscuit and sukarée; some of the latter having been made of white flour, it proved execrable, the Russian sukarée being always made of groats or Graham flour.

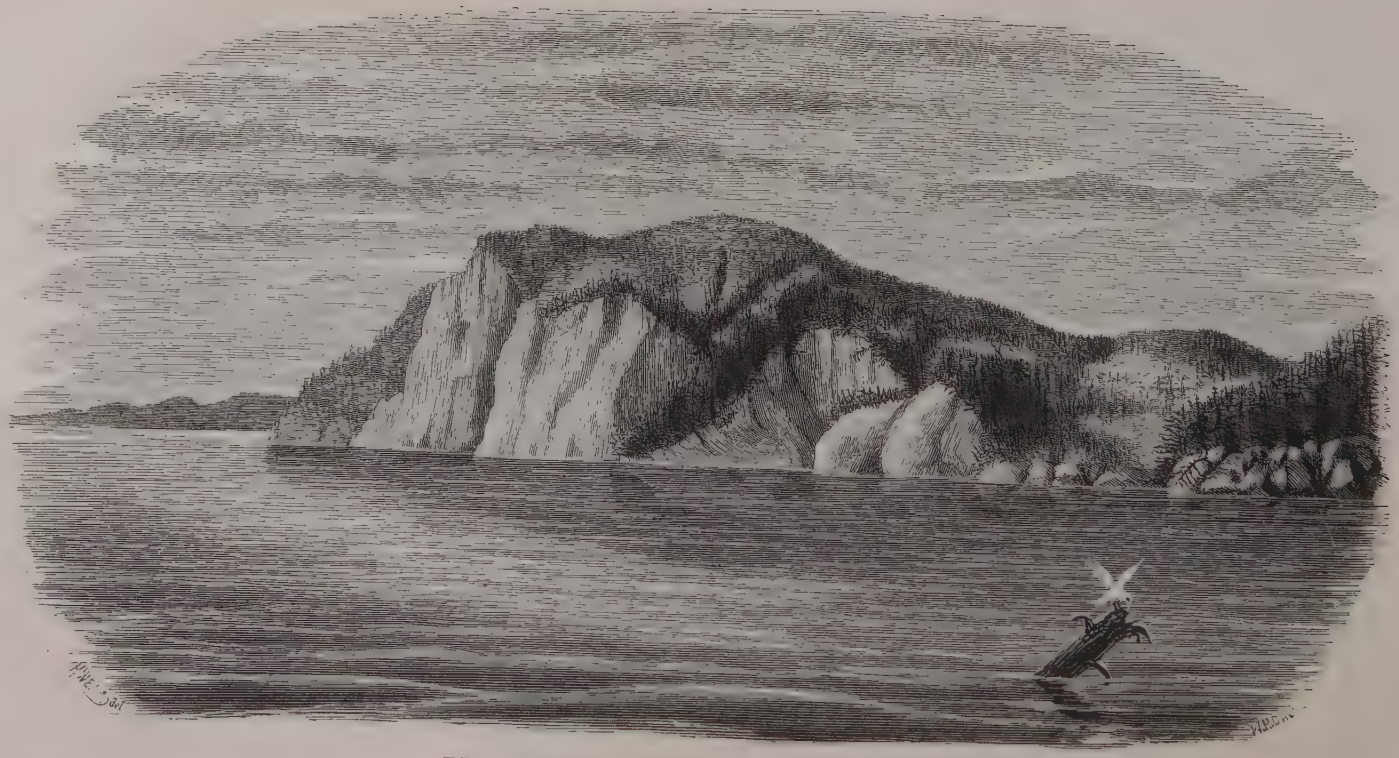
Just above the ravine and little brook where we took our tea was a rounded rock, boldly jutting out into the river. Around this a constant stream of ice-cakes, logs, and driftwood was pouring. The Russians first reached this point, and after one or two trials turned back and camped, hoping that the ice would cease running before the next morning. Kurílla saw this move with great disgust. "The Russians retreat: Unóokuk will not retreat," said he, and struck boldly out into the stream of ice and driftwood. For ten minutes all had their hands full, staving off logs

and ice-cakes, and the danger was too imminent to think about. A clearer part of the river was soon reached in safety, the drift always running most thickly in the strongest current. Paddling up stream a mile or two, the severity of the rain induced us to camp on an island, where we pitched our tent in a willow grove, and endeavored to dry ourselves. The evening meal consisted of salted white-fish and tea. We now discovered that Scratchett had availed himself of the confusion of our starting to appropriate sundry spoons, and other articles of use and necessity, to his own advantage. Although of iron, the loss was as great as if they had been of gold; for who can eat bread and tea without a spoon? We had just two left, and our Indians must take turn and turn about in using them. Another loss which we all regretted was three pounds of sugar, which I had purchased with a shirt, of the individual above mentioned. It is to be hoped that he has duly repented in his subsequent retirement.

Several canoes had followed us through the ice in fear and trembling. Their inmates, camped near us, presented a melancholy spectacle. A woman whose long upper garment consisted of white cotton, with her hair streaming down her back, resembled a drowned rabbit; and an old man seemed to have received a more thorough washing than for many years previous. We were all very wet, but our clothing repelled the rain much better than deerskins or cotton drill.

Blessed be the man who invented rubber blankets! Mine, after a season in the Lake Superior region, did noble service, as well as Whymper's, which he had obtained in British Columbia. Laying them down on the mud in which our camp was situated, only covered by a little willow brush, we spread out our blankets, and were soon at rest. The Indians, except Kurílla, who, as coxswain, slept in our tent, made their tent out of a great sheet of drill, after their own fashion. Bending down the tops of several slender willows, they crossed them in different directions, and spreading the covering over that, the whole was nearly circular. It was always a marvel to me how they could lie down in it, it was so small. After all got inside, the edges were carefully tucked in and the mosquitoes effectually excluded.

The rain prevented the latter from being very troublesome, and we slept comfortably.



THE KOYUKUK SOPKA FROM ABOVE.

The brown Miocene sandstones before mentioned are succeeded here by blue sandstones, which at Nuláto lie below them. The latter contain few fossils, — mostly sycamore leaves (*Platanus*), and other vegetable remains.

Monday, May 27th. — Starting about three o'clock in the morning, we soon passed the Russians, who had gone a little farther in the night and camped above us. We passed through a small slough or *pratóka* between some islands. About ten o'clock we arrived at a fine bluff near the mouth of the Koyúkuk River, a landmark in this part of the country, and known as the Koyúkuk Sópka. Here is a small Koyúkun village, where we stopped and took tea. I bought a large pike (*Esox estor*) and a quantity of dry reindeer meat.

After passing the Sópka the river is very winding, and we frequently crossed it in order to shorten the distance. When in doing so we came to the main channel, it was a hard tug to cross it, and we invariably lost ground, sometimes as much as a mile.

On rounding a turn in the river we saw a large number of canoes lying near the bank and a crowd of dark figures on the shore. These proved to be Koyúkuns, who proposed to accompany us. Iván the tyone, Larriówn, and a handsome fellow in a red shirt, named "Cousin" by Ketchum on his last season's trip, accosted us with gesticulations of welcome. As rain threatened, and we wished to keep our provisions dry, we camped in the best place we could find among the dense thickets of willows which line the shore everywhere. There were a few hills in the distance, but no mountains. The foliage was not fully out, but the delicate green of the young leaves made the river banks very beautiful. Close to the water grow willows and alders. A little farther back are belts of broad-leaved poplars (*P. balsamifera*), and on the dry ground spruce (*Abies alba*), growing to a very large size and mixed with aspens (*Populus tremuloides*), whose light-colored bark and silvered leaves contrast finely with the dark evergreens. On the rocky bluffs a species of juniper is abundant, crawling over the rocks, but not rising from the soil.

On the left bank, which is everywhere low, the willows and poplars appear to predominate. The banks in many places are undermined by the rapid current, and frequently fall into the

river in large masses, with the trees and shrubs upon them, startling the unaccustomed ear with a noise like thunder.

The ground where Ketchum camped the previous year, according to Kurílla, was under water; we had camped on a low island somewhat in advance of the Russians. The Koyúkuns brought their stores of dried meat and fat, and I purchased about fifty pounds of the former. The tariff of prices was high, compared with what we had paid for the same things on the coast. We gave five loads of powder for a duck, seven for a goose, if fat; five balls or a small bundle of leaves of Circassian tobacco, called by the Russians a *papoósh*, for a beaver-tail; six to eight balls for the dry breast of a deer; four or five for a deer's tongue; and for fat, especially the marrow of the long bones of the reindeer, whatever would buy it, usually a pretty high price. A ball, a charge of powder, or two caps, are the units of trade, and will buy almost anything. Knives, beads, flints and steels, needles, small looking-glasses, handkerchiefs of various colors, woollen scarfs, and cotton drill or calico are all useful, but tobacco and ammunition are the great staples. The Circassian or Cherkátsky tobacco, imported only by the Russians, and exceedingly strong, is the prime favorite where the Russians trade; but those who deal more with the English at Fort Yukon like the long natural Kentucky leaf best. The latter we used for our own smoking, obtaining an excellent article from the Russians for thirty cents a pound.

Swans, brant, and sandhill cranes were seen, the former abundantly. Iván Pávloff sent me two eggs of the white-cheeked goose (*B. leucopareia*), which were found on a bit of sandy beach near the camp, and every step added some new plant, insect, or bird to our collections. The Koyúkuk Sópka is composed of a soft crystalline rock apparently unstratified.

In this kind of journey, sluggards are out of place. We allowed ourselves but four or five hours for sleep, and after a cup of tea continued on our way.

Tuesday, 28th.— Iván the tyone, and old Wolasátux came along in their little canoes with some half-dried fish for sale, which we purchased for our Indians. Passing through a narrow pratoka between two islands and the shore, we came to a solitary Indian house, quite empty. On the hillside near it stood a

solitary grave. A little fence of white spruce stakes was built around it, and from several long poles streamers of white cotton were floating. Kurílla said that it was the grave of an Indian who had died in the previous fall, and that the house was occupied by his wife, who spent all her time (except when procuring food) in watching the grave, and devoting all her property to the purpose of adorning it. The house looked neat and clean, the hillside was green, and the sun shone brightly on the lonely grave, as we passed by on the other side of the pratoka. Just beyond, a perpendicular and solitary bluff fronted the river. Close to its face rushed the swift current, with its burden of driftwood, at the rate of seven knots an hour. There was no backing out: we had to cross here. The swift part of the current appeared to be narrow. The canoes first essayed it, and were swept like straws a mile down stream in the twinkling of an eye.

This made us careful. We kept close to the rock, where there was a little slack water, and then, driving our paddles into the water with a will, we passed the current, and reached the opposite bank, not more than a quarter of a mile below. Waiting to rest, we saw the Russians kill a beaver in the water, and then cross the stream with about the same success as ourselves. Continuing on our way, about six o'clock we stopped to boil the chynik and to rest. Iván Pávloff was invited to take tea with us. Sugar being a very scarce article in this country, it is usually boiled with water into hard cakes, which, when properly done, are not affected by the weather. Soft sugar will waste away imperceptibly with the dampness. The orthodox way is to take a fragment of this hard sugar, bite off a small piece of it, and drink your tea without putting any into it. This is much more economical, and is hereby recommended to boarding-house keepers. I was much amused by observing Pávloff, who after finishing his tea replaced the lump from which he had been biting in the common sugar-box.

About ten o'clock we came to a very wide part of the river, where the Russians lay to for a while, and fired a small boat-gun which they carried in their bidarrá. This was to notify the Indians, if any were in the vicinity, that the Russians were ready to trade; but none made their appearance, and the bidarrá soon continued on its way. On a low sand-bar, where the sun poured

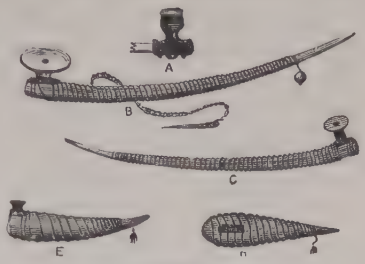
down with double force, and mosquitoes hummed in myriads, we also found an old man and his old wife. I afterwards heard that he had a young one. His hair stood out in every direction where it was not matted down by dirt. His clothing hung in the filthiest rags, and his voice sounded like that of a fishhawk with a cold. His name was Ooskón, or Rabbit, and it was stated by Kurílla that he was noted for his good-humor and generosity. He might have given away all his clothes, which would account for his appearance. His wife was his duplicate, except that she was silent, which is an excellent thing in women. The old fellow brought me a gull's egg, which I gratefully accepted, wished to sell me some fish, which I respectfully declined, and finally brought out two stuffed skins of the beautiful northern phalarope, which I purchased, as they were in very fair condition. I afterwards discovered they were stuffed with a very sweet-scented grass. On pointing this out to Wolasátux, he shook his head gravely, and said, "They are rotten!" These Indians have no appreciation of sweet odors. The wild rose (*Rosa cinnamomea*), which is one of the few fragrant flowers to be found on the Yukon, is called among them by an untranslatable name, on account of its perfume. The only odor they appreciate lies hidden in the steam arising from the soup-kettle.

Rain coming on, we camped on a steep bank, and the Russians followed our example.

I afterwards added a green-winged teal and hooded grebe (*Podiceps cornutus*) to our collection. A high sandy bluff near our camp was full of the nests of the bank swallow. It seemed like a gigantic honeycomb swarming with bees, as the light-winged swallows darted about. The eggs are white, and are laid on a few very fine twigs, which keep them off the sand. I counted nearly eight hundred holes, all of which seemed to be occupied. I obtained from the Indians quite a number of ducks and geese for our kettle.

Wednesday, 29th. — We broke camp about five o'clock in the morning. Nothing occurred to break the monotony of constant steady paddling. Two Indians in the bow of the boat would row until tired, and then we would stop for a few minutes to rest, and let them smoke. The last operation takes less than a minute: their pipes are so constructed as to hold but a very

small pinch of tobacco. The bowl, with ears for tying it to the stem, is generally cast out of lead. Sometimes it is made of soft stone, bone, or even hard wood. The stem is made of two pieces of wood, hollowed on one side, and bound to the bowl and to each other by a narrow strip of deerskin. In smoking, the economical Indian generally cuts up a little birch wood, or the inner bark of the poplar, and mixes it with his tobacco. A few reindeer hairs, pulled from his parka, are rolled into a little ball, and placed in the bottom of the bowl to prevent the contents from being drawn into the stem. A pinch of tobacco, cut as fine as snuff, is inserted, and two or three whiffs are afforded by it. The smoke is inhaled into the lungs, producing a momentary stupefaction, and the operation is over. A fungus which grows on decayed birch trees, or tinder manufactured from the down of the poplar rubbed up with charcoal, is used with flint and steel for obtaining a light. Matches are highly valued, and readily purchased. The effect of the Circassian tobacco on the lungs is extremely bad, and among those tribes who use it many die from asthma and congestion of the lungs. This is principally due to the saltpetre with which it is impregnated. The Indian pipe is copied from the Eskimo, as the latter were the first to obtain and use tobacco. Many of the tribes call it by the Eskimo name. The Kutchin and Eastern Tinneh use one modelled after the clay pipes of the Hudson Bay Company, but they also carve very pretty ones out of birch knots and the root of the wild rose-bush. The Chukchees use a pipe similar to those of the Eskimo, but with a much larger and shorter stem. This stem is hollow, and is filled with fine birch shavings. After smoking for some months these shavings, impregnated with the oil of tobacco, are taken out through an opening in the lower part of the stem, and smoked over. The Hudson Bay men make passable pipe-stems by taking a straight-grained piece of willow or spruce, without knots, and cutting through the outer layers of bark and wood. This stick is heated in the ashes, and by twisting the



PIPES.

A. — Kutchin. C. — Koyúkun.
B. — Innuit. D, E. — Chukchee.

ends in contrary directions, the heart-wood may be gradually drawn out, leaving a wooden tube. The Kutchin make pretty pipe-stems out of goose-quills wound about with colored porcupine quills. It is the custom in the English forts to make every Indian who comes to trade, a present of a clay pipe filled with tobacco. We were provided with cheap brown ones, with wooden stems, which were much liked by the natives, and it is probable that small brier-wood pipes, which are not liable to break, would form an acceptable addition to any stock of trading-goods.

For the first time we were able to use our sail, as a fair wind sprang up in the afternoon, and for a short time we made excellent progress.

About five o'clock we camped at a place where in summer the Indians have a fishery, and which is called *Kamén-sikhter.*

Thursday, 30*th.* — The sealskin of which the bidarrás are made, by long continuance in the water becomes soft and unsound. Hence, as the weather continued rainy, we decided to lay over a day, take the boat out of the water, dry and oil it; the Russians doing the same with their bidarrá. During the interval, many additions were made to our collections. I observed a fine-looking Koyúkun, called *Toho-nidóla*, who wore a mantle made of a dressed deerskin. It was cut to a point behind, and into fringes around the edge. It was ornamented with a few beads, hanging in short strings, and was colored on the inside with red ochre; making a very graceful article of apparel. The breeches had the moccasins continuous with the leg, and were heavily embroidered with large black and white beads. The pattern universal among the Koyúkun men consists of a band of beads in front, from the thigh to the ankle, a short one crossing it at the knee. At the ankle the long band bifurcates, and the two ends, after reaching the sides of the foot,

Tohonidola.

continue all around its edge, except over the heel. The pattern for females is similar, but the perpendicular band on the leg is omitted. The Koyúkun male parka has been described. The pattern of ornamentation is a broad band of beadwork across the breast and back, and over the shoulders, with fringes on the pointed ends, and a few short tails of beadwork in front and on the sleeves. The female parka comes below the knee, and is cut round like an ordinary dress, but a little shorter in front than behind. They are ornamented with a similar band around the shoulders, sometimes one around the wrist, and one around the edge of the skirt in lieu of fringes. Before the introduction of beads by the Russians, this work was done in porcupine quills, often in very tasteful patterns, and among the *Tenán Kutchin*, or Tananáh River Indians, this practice still obtains White and black or brick red are the only colors I have seen used on clothing, and they are always embroidered in alternate bands. Other beads, of various colors, in strings seven feet long, are valued by the natives as property, having a fixed value of two marten-skins a string. They pass from hand to hand, much as we use money. Small beads, of various kinds, are much in demand among the women, who use them as ornaments for their children. Strong beads, over which the hand passes smoothly, are the only kind suited for fur-trading. Red, black, white, dark blue, and amber are the desirable colors.

Friday, 31*st.* — Making an early start, we passed a point known as *Sakatalóntan*, about half past three in the morning. Large stacks of driftwood, as big as houses, came floating down in the current, and great care was necessary to avoid collision. These were piles of logs thrown upon sandbars by previous freshets, which the unusually high water had floated off entire. We passed many low bluffs of blue sandstone and a few gravel-banks. Tom found a mallard's nest on the bank, with nine eggs in it, which were devoted to an omelet, after carefully emptying the shells with a small blowpipe. We camped on a high bank without taking the tent out of the boat, as the night was remarkably pleasant and the mosquitoes unusually quiet.

Saturday, June 1*st.* — The next morning at one o'clock we were on our way again, working hard against a strong current. The sandstones were now succeeded by conglomerate and meta-

morphous quartzose rocks. Many butterflies, including the familiar swallow-tail (*Papilio Turnus*), and another species somewhat similar (*P. Aliaska*), were hovering over the surface. Upon mentioning that I would give a needle apiece for good specimens, a commotion was aroused amongst the little fleet of birch canoes which accompanied us. All was excitement, paddles were flourished in the air, the light canoes darted about after the slowly sailing, unsuspecting butterflies, and the result was a considerable number of passable specimens. I saw, also, several wax-wings (*Ampelis garrulus*) in the bushes along shore, and obtained a sandhill crane. A fair wind sprang up and sent the

Mt. Hohonila from the Melozikakat.

Russians scudding around a six-mile bend under their large sail. Our boat proved a very slow sailer, the wind soon dropped, and we had to pull all the way around the bend.

After camping we employed Larriówn's wife to sew up some cuts in the sealskin of our bidarrá. These were made by the constant stream of driftwood; but when sewed up and the seam well rubbed with tallow, the boat was as tight as ever. The skin was old and very rotten, so that we had to exercise the utmost precaution in landing and in avoiding driftwood or rocks.

Sunday, 2d. — About ten o'clock the next day we took our tea at the mouth of the *Melozikákat* or Clear River. From this

point a fine view may be had of a mountain which rises perhaps two thousand feet above the river, and is known to the Indians as Hoho-níla. The upper portion still retained snow in many ravines, though later in the season it disappears entirely. The mosquitoes were exceedingly troublesome. The night had ceased to be dark, as the sun remained only about two hours behind the high hills which shut out the horizon.

Monday, 3d. — Passed the *Uka-wútne* or "Look-and-see-it" River. It is a small stream. Near its mouth the Yukon is very broad and full of islands. About noon the sun was so scorching (90° in the shade) that we pulled into the bank and rested for a couple of hours. We then proceeded to the point on the right bank where the Russians had camped, waiting the report of a messenger who had been sent to the village of Nowikákat on the left bank a few miles above. As he did not appear I turned in, and had hardly got under the blankets, when I heard the well-known voice of Larriówn, who poked his ugly head into the tent, saying there was plenty of dry meat and many Indians at Nowikákat, and begging a little tobacco for his information.

I put on my boots and stepped out of the tent, around which a number of Indians had gathered. The old Nowikákat tyone was there, and one of the men who had gone up with Ketchum suddenly appeared. He gave us the welcome information that Ketchum and the party had reached Fort Yukon in safety, and had started with open water for Fort Selkirk, having sent the Indians and six remaining dogs down the river in a bidarrá made of moose-hide.

Tuesday, 4th. — We struck our tent, broke camp, and started for Nowikákat, in company with the Russians and Indians. We hoisted the American flag over the blue cross and scallop-shell of the Scientific Corps, and came into Nowikákat Harbor with colors flying. We received and returned a salute of musketry, and, finding with difficulty a place among the myriads of birch canoes where we could moor our boat, we pitched our tent in the middle of the village. We informed the tyone, or chief, that we were exceedingly tired, and must sleep before any trading could be done. This was quite true, as I, for one, had slept but about two hours out of the last forty-eight. We tied the flaps of the tent closely, but even this did not prevent the Indians from

raising the edge of the canvas and peering in upon us with as much curiosity and pertinacity as country boys at a circus After a few hours' rest we rose and dressed. We could not keep out the Indians, until we admitted the tyone, whose repeated orders kept them outside for a time. He watched the process of washing with great interest, from which I inferred that he did not indulge in that luxury. He was very anxious that we should present him with our brushes, combs, soap, and other articles for the toilet, which we were obliged to refuse him ; but we made up to him for the disappointment by presents of tobacco, powder, and ball. We heard that Antoine Houle, the Fort Yukon interpreter, was at Nuklukahyét with a trading party, and we desired to send a letter to him ; but old Iván, the tyone, prevented our doing so, by frightening our messenger with an account of the danger of making such a journey alone. For this piece of mischief he got a scolding, which astonished him and made him less officious in future.

After breakfast, which we shared with the Nowikákat tyone, we proceeded to business. Whymper was busy with his sketch-book, and left the trading to me.

All accounts of the country between Nowikákat and Fort Yukon agreed in representing it as a district where provisions were very scarce, and so we had determined to provide them in advance. I purchased, for seven fathoms of drill, three papooshes of tobacco, and five balls, a birch canoe of the largest size, with its paddles. From the abundant stores of dried meat and fat which the Indians had laid in, I obtained about three hundred pounds of dry deer and moose meat, clear moose fat in birch dishes, and dried entrails of the deer, which were filled with fat of the best kind. I was able to secure, besides, a large number of moose and deer tongues, and dried moose noses, the latter making a delicious dish when thoroughly boiled. We also succeeded in engaging two more men to take this canoe-load of meat at least as far as Nuklukahyét. A large number of birds'-nests, mouse-skins, and other specimens of natural history, were also secured. I had then an opportunity to make a few observations on the place and its inhabitants.

Nowikákat Village is situated on a beautiful little enclosed bay, into which the river of the same name enters, with several smaller streams. This river is about one hundred miles long, and its

mouth is about one hundred and thirty miles from Nuláto in a direct line. By the Yukon the distance is considerably greater. The head-waters are on the southeast side of the Nowikákat and Káiyuh Mountains, and, according to Indian accounts, a short portage can be made to the head-waters of the *Shágeluk* or so-called Innoko River, or, by crossing the mountains, to the Káiyuh River. These portages are frequently made by the Indians who trade with the Ingaliks.

A narrow entrance connects the basin with the Yukon. Through this a beautiful view is obtained, across the river and

Looking out of Nowikakat Harbor.

through the numerous islands, of the opposite shore and the Yukon Mountains in the distance. The feathery willows and light poplars bend over and are reflected in the dark water, unmixed as yet with Yukon mud; every island and hillside is clothed in the delicate green of spring, and luxuriates in a density of foliage remarkable in such a latitude.

The village appeared to be a mere collection of huts, temporary lodges, and tents; one or two winter houses seemed as if long deserted and rapidly going to decay. All these were crowded together on a low bank, from which the willows seemed to have been recently cut away. The shore was absolutely covered with

birch canoes. The dress of the Indians was similar to the Koyúkun, already described; but a few specimens of fine bead-work and fringed hunting-shirts showed the effect of English intercourse. The guns were all English single-barrelled flint-locks, while the Koyúkuns are provided with double percussion guns from the traders in Kotzebue Sound, through the Eskimo. The principal supply of food seemed to be moose meat. Fish was evidently scarce, and deer less abundant than near the coast. As evening approached, Larriówn the shamán, and his wife, were called upon to exercise their art for the relief of a sick man who apparently had not long to live.

The belief in shamánism is universal among the natives of Alaska, Eskimo as well as Indians. Even the Aleuts, long nominally converted to Christianity, still retain superstitious feelings in regard to it. It is essentially a belief in spirits who are controlled by the shamán; who come at his call, impart to him the secrets of the future and the past, afflict or cease afflicting men by sickness at his behest, and enable him to advise others as to seasons and places of hunting, good or evil omens, and the death or recovery of the sick. These however are not spirits who were once men.

Many Indians — in fact, all the Tinneh that I have conversed with, who have not been taught by the English or Russian missionaries — do not believe in the immortality of man. Of those who have a dim notion of the kind none have any idea whatever of future reward and punishment, of any Supreme Power or Deity, of good and evil in a moral sense, or of anything which can be called a religion. Assertions to the contrary proceed from the ignorance or poetical license of the author, or from an intercourse with tribes who have derived their ideas from missionaries.

The support which the spiritual instincts of human nature demand is met among the Indians by a belief in shamánism. All animals, woods, waters, and natural phenomena such as the aurora borealis or thunder and lightning, are supposed to be either the abodes or the means of manifestation of spirits. The latter have power and knowledge limited by their respective spheres. The most powerful and beneficent of all are the objects of ridicule and contempt, as often as of fear or reverence, in the Indian legends which relate to them. The whole relation,

between the Indians and these spirits as they believe in them, is one of self-interest and fear. They preserve all bones out of reach of the dogs for a year, when they are carefully buried, lest the spirits who look after the beavers and sables should consider that they are regarded with contempt, and hence no more should be killed or trapped. Other singular superstitions, the result of accident, some local incident, or unexplained coincidence, are found to be peculiar to each narrow territory or small tribe.

The younger Indians look on these things with contempt and ridicule; it is only when starvation or sickness impends, or the continued threats of some greedy shamán create alarm, that they pay any heed to them. It is with age alone that these superstitions become firmly implanted in their minds. The strange effects which firm belief and vivid imagination have frequently produced among civilized and intelligent human beings are too well known to require further confirmation. Hence it is not to be wondered at among ignorant Indians, whose imagination is untrammelled by knowledge of the simplest natural laws, that the self-deluding frenzy of the shamán should, as it frequently does, produce seemingly supernatural effects, which confirm his influence.

Among the Indians who frequent the trading-posts many may be found who have imbibed a few indistinct ideas from Christian theology, without renouncing their native superstitions, or gaining any comprehension of the cardinal principles of morality or religion. It is from intercourse with such, that many of the popular delusions about the "Great Spirit" of the Indians have arisen.

In the present instance, the Indians formed a circle around a fire, near which lay the sick man wrapped in a dressed deerskin. Larriówn had donned a suit of civilized clothing, which he had obtained from some trader. He wore a very large black felt hat with a broad brim, and his wife had a similar equipment, so that it was difficult to distinguish them. They walked in contrary directions around the fire, gazing at it or into vacancy. At intervals he uttered a deep bass sound between a shout and a groan, which she answered in a higher key, both quickening their pace and occasionally stopping short and shuddering convulsively from head to foot. At last the responses were more rapid and assumed a kind of rhythm; the whole circle of Indians acted as chorus in

the intervals. In the midnight dusk the circle of tall swarthy forms in strange apparel, the fitful gleams of firelight, the groans of the sick man, and the mysterious writhing forms before him, all united to give to the strange chorus an intensely dramatic effect.

Contortions which were almost convulsions shook those two black forms, while the fiendish eyes of Larriówn rolled until the whites alone were visible. Between the spasms both made mesmeric passes over the sick man, keeping time with the deep monotonous chorus, which might well have been the despairing wail of a lost spirit. The muscular contortions gradually grew less violent, from sheer weakness. The ring of Indians gradually broke up, the chorus ceased, and the ceremony was over.

Wednesday, 5*th*. — We rose at five, and putting our meat into the canoe and our baggage into the boat, we followed the Russians out of the basin. This is the only place on the Yukon which appears to me safe for wintering a steamer, unless she were beached. The ice descending in the freshets would at any other point carry her away or crush her. The heat of the sun was so great that we lay over from eleven until two, and rested in the shade of some magnificent birches. Nowikákat is noted for the beauty and good workmanship of the birch canoes made there. The single canoes are easily carried in one hand. They are about twelve feet long, just wide enough to sit down in, and have the forward end covered for three or four feet with a piece of bark, to keep water out. They are exceedingly frail. The frame is made of birch wood steamed, bent, and dried. They are sewed with the long slender roots of the spruce, and calked with spruce gum. The bark is put on inside out, shaped, and sewed over a clay model just the shape and size of the proposed canoe. The regular price for a single canoe is a shirt, or five marten skins. The paddles are of the usual lance-head shape, with a ridge in the middle on each side, running down to the point and strengthening the blade. They are four or five feet long, with a cross-piece at the end of the handle, and gayly colored with red ochre, blue carbonate of copper, or a green fungus which is found in decayed willow wood. The single canoe will carry a man and a bag of flour.

The large canoes are of the same shape, but will carry three men and their baggage, in all about six or eight hundred pounds. They are sometimes sixteen feet long, and do not turn up at the

ends, as the canoes of the Lake Superior Indians do, but are straight, and furnished with a Y-shaped prow above the cut-water. Each carries a dish of spruce gum, some extra pieces of bark, and a bundle of spruce roots, to repair damages, which frequently occur; and a small framework of slats for the occupants to sit on.

In the afternoon we were surprised to see a wreath of smoke curling over the trees beyond a point on the river. The small canoes immediately fell back; and Iván, with his usual cowardice, called out to us to stop, for fear of hostile Indians. Disregarding his warning, we took the lead, and saw a white man and two Indians standing by a large fire. We supposed it was a guide, or Antoine Houle himself, whom we had expected to join at Nuklukahyét. It turned out to be a man from Fort Yukon, who stated that he had left the fort on account of long-continued ill-treatment, and that he had trusted to fortune to enable him to escape from a tyranny which he had resolved to bear no longer. He had started from the fort, with a little powder, a gun, and a few bullets, in a small canoe, and had supported himself by killing game; cutting up his bullets into shot, and when these failed using gravel from the beach. He had just been upset, lost his gun and everything except what he had on his person. He had passed Antoine at Nuklukahyét, telling the latter that he had been sent down with letters for us, as he knew from Ketchum that we were coming up. Antoine had given him a letter which Ketchum left for us, and was now on his way back to Fort Yukon with the furs he had bought. The man gave his name as Peter McLeod, and stated that he had been fourteen years in the Hudson Bay Company's service. We called upon him and Iván Pávloff to join us at our noon-day meal, and treated them to bacon, biscuit, and tea. He assured us that he had not tasted bread for four years.

Assuming his story to be true, we could not advise him to return. I furnished him with trading-goods sufficient to purchase provisions until he should arrive at Nuláto. Pávloff, with his habitual generosity, insisted on furnishing him with a blanket, to replace that which he had lost, a flint and steel to obtain fire, and an order to Yagor to feed him until his return. We all united in wishing him a safe arrival, and in supplying him with

such necessaries as we could spare, and then continued on our way.

Thursday, 6th. — We passed through an exceedingly long pratoka, which was so winding and narrow that I suspected we had got into a small river instead of a slough of the Yukon. We had intended to travel by night and take our rest in the hot noontime; but the sight of some fresh deer meat in the camp of the Indians who had preceded us induced my companion to defer this arrangement until we should leave the Russians at Nuklukahyét. We therefore camped, and indulged in the luxury of some hot venison steaks.

Friday, 7th. — We had hitherto been unable to use the tracking-line, except at short intervals; but the slight fall in the water had left a narrow beach, which we now availed ourselves of.

The little river tern, whose bright colors and graceful motions cannot fail to attract the traveller's eye, was very common in this part of the river. One of our men in tracking passed near one of their nests, and the parents immediately attacked him. Swooping and returning, in long curves, they almost brushed his cap, uttering loud cries, and keeping it up for several hundred yards. At last, annoyed by their conduct, which he did not comprehend, he brandished a large stick in the air. Even then they did not rest until we were a quarter of a mile from their breeding-place. I obtained a fine piece of black obsidian on the beach, and noticed syenitic rocks for the first time in the Yukon territory.

Saturday, 8th. — About eleven o'clock the next day we reached the mouth of the Tozikákat, which empties into the Yukon some fifteen miles from Nuklukahyét. Here we boiled the chynik and rested for a while. We usually sent one of the small canoes up a little distance when we camped near a small river, in order that we might obtain clear water for making our tea. The Yukon water is full of sediment. The mosquitoes were exceedingly troublesome; without gloves and a net nothing could be done. The Indians always placed a dish of wet moss with a few coals in it on the bows of their canoes; this produced a smoke which kept the insects away from the canoe when in motion. We smoked them out of our tent, when camping, in the same way.

The mouth of the Tozikákat is obstructed by a bar, on which lay piled hundreds of cords of driftwood.

THE TWIN MOUNTAINS FROM THE MELOZIKAKAT MOUTH.

To the east the broad mouth of the Tananáh River was seen, where it joins the Yukon. The latter curves abruptly to the left, and between them lies the low land, forming a point or island. This is Nuklukahyét, the neutral ground where all the tribes meet in spring to trade. Behind it rose the mountains. Two summits rose above the others, known by the Indian names of *Mo-klán-o-klikh* and *Mont-klag-at-lin'*. The latter is really on the right bank of the Yukon, and the former on the left, but from our point of view this was not perceptible. At the junction the Tananáh is much broader than the Yukon, yet into this noble river no white man has dipped his paddle.

Below the junction the Yukon attains a width of five miles at least. A fair wind sprang up, and, as usual, the Russians left us far behind. By dint of hard paddling, about half past five in the afternoon we rounded the bluff opposite Nuklukahyét. Here we found Pávloff, who, with unexpected consideration, was waiting for us. We crossed together, with our flags flying. The Nuklukahyét tyone, who had been at Nuláto during the winter, hailed us from the beach. Pávloff answered him, and we landed, drew up our boats, and prepared to go through the ceremony for such cases made and provided. We formed in line, with blank charges in our guns. The Indians did the same. They advanced on us shouting, and discharged their guns in the air. We returned the compliment, and they retreated to repeat the performance. After ten minutes of this mock fight the tyone appeared between us. He harangued the Indians, who answered by a shout. Turning to us, he informed us that we were now at liberty to transact our business.

Antoine and his Indians had left for Fort Yukon two days before. There was little or nothing to eat at Nuklukahyét. Some men had been sent by the tyone after moose, and meanwhile the annual dances which take place here were performed on empty stomachs.

The tyone came in with a little dish of fat as a present. He regretted that there was nothing better to offer us, and gave us a note which Ketchum had written during the winter; in it he requested that we would give the tyone, who had materially assisted him, any powder and ball we could spare. The powder and ball furnished by the Company was exhausted at Nowikákat, but I

made him a present of a can of powder and forty balls from my own private supplies, and asked him to keep a little meat for us when we should return, which he promised to do. He was a rather good-looking Indian, possessed a good deal of intelligence, and was younger than any other tyone we had seen. He wore an English hunting-shirt of red flannel, ornamented on the shoulders with large pearl buttons, and fringes of mooseskin. Around his waist was a long Hudson Bay sash. He wore moccasins, and mooseskin trousers cut in the English fashion, with fringes down

Young Nuklukahyet tyone.

the outside of the leg, and blue leggins tied with a band of bead-work below the knee. His black glossy hair was cut straight around the neck, and parted a little on one side. Altogether, he appeared much cleaner and more attentive to dress than any of the Indians of the Lower Yukon.

All these Indians paint their faces. Black is obtained by rubbing charcoal and fat together. Vermilion is purchased of the traders, and supplies the place of the red oxide of iron which they formerly used. I saw one who appeared to have used graphite, or plumbago, on his face, but on examining the article itself it

proved to be micaceous oxide of iron, and was said to be obtained on the banks of the Tananáh.

They wear an ornament made of dentalium, the *sookli* of the Russians, and "money-shell" of American traders. It is here

Nose ornament of the Yukon Indians.

represented of natural size. A hole is pierced through the skin of the nose, below the cartilage, when very young. Women and men alike wore it; while at Koyúkuk we noticed it only among the women.

These Indians are fond of ornaments, and among other things I noticed in use as such were necklaces of bears' claws and teeth, sable tails, wolf ears, bands of beads and dentalia, embroidery of dyed porcupine quills, small ermine skins, hawk and eagle feathers, beavers' teeth (with which they whet their knives), and the bright green scalps of the mallard. Some wore hoops of birch wood around the neck and wrists, with various patterns and figures cut on them. These were said to be emblems of mourning for the dead.

I noticed several graves in which the dead were enclosed, in a standing posture, in a circle of sticks squared on four sides and secured by hoops of green wood, thus looking much like a cask. From the sticks hung strips of cloth and fur.

In the afternoon we witnessed one of their dances. The spectators formed a circle around two men who were the performers, and joined in the usual monotonous chorus of "Ho, ho, ha, ha," &c. The dancers were stripped to the waist, and held in each hand eagles' feathers tipped with bits of swan's-down. Their heads were shaved, and bound with fillets of feathers. The dance consisted in motions of the head, arms, legs, and every muscle of the body in succession; putting themselves in every imaginable posture, joining in the chorus, and keeping exact time with it and with each other. I could not find out its emblematic meaning.

We engaged two Indians to take the canoe of meat to Fort Yukon. One of them, whom we had called Bidárshik, had come with us from Nowikákat. The other was a wild specimen of the Nuklukahyét tribe, whom we decided to name Dick. A number

of others indicated their intention to travel with us to Fort Yukon and trade there. One of them had been employed by Ketchum the previous summer. About three o'clock in the afternoon we left Nuklukahyét and the Russians behind us, receiving a salute from them, which we duly returned.

The river was becoming deeper and narrower, and the hills were rising and approaching more closely to the Yukon, as we ascended. Late in the afternoon a sunken rock cut a hole in the

In the Ramparts.

bidarrá, and we halted for repairs. On account of the extreme heat we now decided to travel by night and camp in the hottest part of the day.

Monday, 10*th*. — We entered, about three o'clock in the afternoon, between high bluffs and hills rising perhaps fifteen hundred feet above the river, which here was exceedingly deep and rapid and not more than half a mile wide. The bends were abrupt, and the absence of sunlight and the extreme quiet

produced a feeling as if we had been travelling underground. The appropriate and expressive English name for these bluffs is "the Ramparts."

We were approaching the so-called Rapids of the Yukon, of which we had heard so many stories. The Russians had predicted that we should not be able to ascend them. The Indians joined in this expression of opinion, and had no end of stories about the velocity of the current and the difficulty experienced in

Looking back at the Rapids.

ascending them. We all felt a little anxious, but were confident of overcoming the supposed difficulty in some way. We met some Indians and obtained a little fresh meat. About midnight we arrived at the Rapids. The river is very narrow here, and the rocky hills rise sharply from the water. The rocks are metamorphic quartzites, and a dike or belt of hard granitic rock crosses the river. The fall is about twelve feet in half a mile. The rapid current has worn the granite away on either side,

forming two good channels, but in the middle is an island of granite, over which the river rushes in a sheet of foam during high water. There are several smaller "rips" along the shore, especially near the left bank, but nothing to interrupt steamer navigation, except the very rapid current.

Several Indians attempted to ascend in their small canoes. We saw them reach a point just below the island, and by dint of the hardest paddling keep stationary there a few minutes; when, their strength being exhausted, away went the canoes down stream like arrows.

We joined our tracking-line with several rawhide lines belonging to the Indians, and by keeping close to the rocks succeeded in tracking over the worst part without much difficulty. Taking our seats again, we had a hard pull to pass one jutting rock, and our troubles were over. We then enjoyed a well-earned cup of tea, and took a parting glance at the Rapids from above. From this point only a broad patch of foam in the middle of the river indicated their existence.

Tuesday, 11*th*. — Coal has been said to exist in this vicinity, but erroneously. There are no sandstones or other fossiliferous rocks, and the granite is immediately succeeded by quartzites. I found plenty of wild garlic on the rocks, and currant and gooseberry vines in blossom. The Indians were attended by numerous little dogs, which ran along the shore, following the canoes, and sometimes swam across the Yukon two or three times in a day. These were excellent hunters, but too small to use with sleds. During the day they dislodged a porcupine, of which I secured the skull.

Several women were with their husbands, who intended to leave them somewhere on the road until their return from trading. They were hideously ugly and dirty, — far worse than the Koyúkuns or Ingaliks whom I had seen. They took charge of the large canoes with the baggage, while the husband carried the furs in his small canoe. There were several babies, all very dirty, but otherwise like most Indian babies. During the day they were tied into a kind of chair made of birch bark and packed with clean dry moss, which was changed when occasion required. The object itself looked much like an ordinary willow baby-chair, but had a projection in front between the child's legs, which came

up as far as its breast, and prevented its tumbling out when untied.

It is remarkable that there are no terraces along the river, and the flinty rocks show ice-markings only for a foot or two along high-water mark.

Wednesday, 12*th*. — The water, which had fallen some two feet, rose about six inches during the day. The Indians assert that this second rise always takes place, and precedes the starting of the salmon up stream. We passed a dead moose in the water, and shortly after the Indians killed another, some of the meat of which we purchased. Passed a wrecked canoe on some shoals. The next day we passed the Yukutzchárkat River, which Captain Ketchum had called, on his sketch-map, the Whymper River, in compliment to our friend and companion, Mr. Frederick Whymper.

Thursday, 13*th*. — The long handle of our frying-pan having broken off, as they invariably do in travelling, it had been bent, so that it might be used to catch hold of the pan, put it on and off the fire when hot, &c. We were much annoyed at finding that our Indians had left it behind at the last camp. This may seem trivial; but it is no small undertaking to use a frying-pan without a handle on an open wood-fire. Such accidents in an uninhabited country bring forcibly before the mind the great value of many small conveniences which we never think of at home. The night was spent in tracking around a very long bend, which left us in the morning only a few miles in a direct line from the point which we had left in the afternoon. We cut the skin of our bidarrá again, but pushed on, keeping her dry by bailing.

Bidárshik and Mikáishka, who kept in advance of us, killed a large moose, and we were well supplied with fresh meat.

Friday, 14*th*. — Passed a very small stream called by the Indians *Tátsun-íkhtun*, or "Caught-in-the-rocks." I found a fossil skull of the musk ox (*Ovibos moschatus*) on the beach. Wild roses, snowballs, and gold-thread were in blossom on the hillsides, and the fragrant juniper scented the air. A fine bluff, with a rocky face like a great staircase, marked the mouth of the Tséetoht River on the right bank. After this the river begins to widen, and numerous small islands occur.

Saturday, 15*th*. — The next day we left the mountains be-

hind us. Just beyond them the Notokákat, or Dall River of Ketchum, enters the Yukon from the north. The latter river is very broad at this point. We passed through some very strong water. Not the least annoyance in this kind of travel is the constant complaining of the Indians, unused to steady hard work and ever ready to shirk, doing on principle the least they can.

Monday, 17*th*. — We enjoyed from our camp a fine view of the end of the Ramparts and the intervening islands. Passed by several deserted houses formerly inhabited by some Indians of the Kutchin tribes, who all died five years ago of the scarlet fever. This fever was introduced by a trading-vessel at the mouth of the Chilkáht River. From the Chilkáht Indians it spread to those of the Upper Yukon, and down the river to this point, where all died and the disease spent itself. These are known to the English as the Small Houses, and the locality is an excellent one for game and fish of all kinds. The women were left behind on an island in the morning, and the Indians, relieved of the heavy canoes, were already far in advance of us.

Tuesday, 18*th*. — One of the few who accompanied us followed a cow-moose in the water until tired out, when he killed her with his knife, and with some difficulty we towed her ashore. We occasionally saw a black bear or a Canada lynx on the bank. For several days we kept steadily on, little of interest occurring. It was noticed that the trees began to grow smaller and more sparse as we ascended the river. The sun hardly dipped below the horizon at midnight, and his noontide rays scorched like a furnace. The mosquitoes were like smoke in the air. Through constant and enforced observation, I came to distinguish four kinds, — a large gray one, and another with white leg-joints, a very small dust-colored one which held its proboscis horizontally in advance, and another small one which carried its probe in the orthodox manner. All were distinguished from the civilized species by the reckless daring of their attack. Thousands might be killed before their eyes, yet the survivors sounded their trumpets and carried on the war. A blanket offered them no impediment; buckskin alone defied their art. At meal-times, forced to remove our nets, we sat until nearly stifled in the smoke, and, emerging for a breath of air, received no mercy. My companion's hands, between sunburn and mos-

LOOKING BACK AT THE END OF THE RAMPARTS.

quitoes, were nearly raw, and I can well conceive that a man without a net, in one of these marshes, would soon die from nervous exhaustion. The mosquitoes drive the moose, deer, and bear into the river, and all nature rejoices when the end of July comes, and their reign is at an end.

Both banks had become very low and flat; the region had a dreary appearance. Only five snow-covered peaks, supposed to be part of the Romántzoff range, rose above the level of the plains. These are the only mountains near the Yukon, in Russian America north of the Alaskan range, which bear snow throughout the year.

The plain here described reaches to the shores of the Arctic Ocean, broken only by a few ranges of low mountains near the coast, of which the Romántzoff are the highest. To the eastward it rises almost imperceptibly, attaining its highest elevation between the head-waters of the Porcupine and the left bank of the Mackenzie. This table-land, somewhat broken and rocky, as seen abutting on the Mackenzie River has the appearance of high hills. These are the "mountains" of Richardson. There are no true mountains north of the Yukon, except the Romántzoff. Nothing of less than five thousand feet in height has a right to the title of mountain; but in the careless speech of the Hudson Bay trappers and traders anything more than two hundred feet high is a "mountain."

Saturday, 22d. — After passing the Birch River of the English, called by the Indians *Tohwún-nukákat*, we came upon a camp of the Kutchá Kutchin'. Camping here, I purchased a number of fish, which they were catching and drying. There were four or five men, a boy or two, and five women. All were much finer-looking than the Únakhatana we had left behind us at Nuklukahyét. All wore many articles of English make; one of the women had a calico dress on. They had many dogs, all of the black, short-haired, long-legged English breed.

The men wore the Hudson Bay moccasins, leggins, and fringed hunting-shirts of buckskin, originally introduced by the English traders, who obtained them from the tribes to the southeast. They had abundance of the fine bead-work in which the French Canadians delight, and which those women who frequent the forts learn to excel in.

The next afternoon, when we awoke we found the old chief from Fort Yukon waiting to see us. After a liberal present of tobacco and a tin cup, he returned the compliment by a small piece of very fat moose meat. The old fellow's name was *Sakhnú-ti*, which the traders have corrupted into Senatee. The heat was so extreme that we deferred our start until half past eight in the evening.

Sunday, 23d. — We stopped for tea and rest twice; and when opposite the mouth of the Porcupine River we delayed a few moments, to set the colors and load our fire-arms. Rounding a bend of the river, about noon we saw the white buildings of the fort on the right bank, about a mile above the mouth of the Porcupine. We gave them a hearty salute, which was returned by a fusillade from a large crowd of Indians who had collected on the bank. Landing, we received a cordial greeting from an old French Canadian and two Scotchmen, who were the only occupants. The commander and Antoine Houle were daily expected, with the remainder of the men and the annual supply of goods from La Pierre's house, by way of the Porcupine River.

We were shown to a room in the commander's house, where we deposited our baggage; and, after putting our boat and equipment in safety, we turned in for a good nap.

The journey, exclusive of the time spent at Nowikákat and Kaménsikhter, had occupied less than twenty-seven days, and the distance travelled we estimated as about six hundred and thirty miles. In a straight line the distance from Nuláto to Fort Yukon is over four hundred and eighty miles.

We were much elated at the successful issue of our journey, and I confess to having felt a pardonable pride in being the first American to reach Fort Yukon from the sea.

This trading-post was founded by McMurray in the season of 1846–47, and the original fort was a mile or more farther up the river. The present fort was commenced in 1864, and at the time of our visit needed only the erection of a stockade to complete it. The cause of the change of location was the undermining and washing away by the river of the steep bank on which the old fort was built. At this period, the old houses had been removed, and some of the remaining foundation-timbers projected far over the water.

FORT YUKON, IN JUNE, 1867.

The present buildings consist of a large house, containing six rooms, for the commander; a block of three houses, of one room each, for the workmen; a large storehouse; a kitchen; and four block-houses, or bastions pierced for musketry, at the corners of the proposed stockade. Outside of the fort is a small house of two rooms, belonging to Antoine Houle the interpreter.

All the houses were strongly built, roofed with sheets of spruce bark pinned and fastened down by long poles. The sides were plastered with a white mortar made from shell-marl, obtainable in the vicinity. Most of the windows were of parchment, but those of the commander's house were of glass. The latter was provided with good plank floors, and the doors and sashes were painted red with ochre. The yard was free from dirt, and the houses, with their white walls and red trimmings, made a very favorable comparison with any of those in the Russian posts.

The fort is situated about two hundred miles from La Pierre's House, by the Porcupine River, the journey there and back being performed in about twenty days. Further particulars in regard to its geographical position will be found elsewhere. The inhabitants are all employés of the Hudson Bay Company. Most of them are from the Orkney Islands and the north of Scotland, while a few are French Canadians, with a mixture of Indian blood. At this time the garrison consisted of Mr. J. McDougal the commander, and six men, of whom four were Scotchmen. The Rev. Mr. McDonald, a missionary of the Established Church, was also expected with the boats.

The next day we got up a good breakfast, and invited the three men who had received us. The repast consisted of flapjacks, bacon, tea with sugar, and moose meat. As several of them had been some years without tasting bread, it may be imagined this was a rare treat to them. The fare for men and dogs at this place is the same, i. e. dry moose meat alternating with dry deer meat, occasionally varied by fresh meat of the same kind, and the slight supply of game and fish which is now and then obtainable. The trading-goods which are designed for this point take two years in transportation from York Factory on Hudson Bay. One portage of over fifty miles has to be made, between Fort McPherson, on Peel River, to La Pierre's House on the Upper Porcupine. Here the goods are carried on sleds in winter, across

the high, rough, and broken table-land between the two rivers. On account of these difficulties in transportation, few provisions are ever sent to this isolated post. These few find their way to the table of the commander, or to the Indian tyones who bring large quantities of furs to the annual trade. The men should receive three pounds of tea and six of sugar, annually, to flavor their diet of dry meat; but I was informed that this supply was exceedingly irregular, and often failed entirely.

The Indian chiefs often obtain a small present of tea, sugar, or flour, but the latter is quite inaccessible to the men, except through the favor of the commander. These men are allowed two suits of clothes annually, if the supply holds out; but for anything else they must wait until the furs are all purchased, and then, if anything remain after the Indians are satisfied, the men are allowed to purchase. Even if by their own skill they trap furs enough to buy articles of clothing, the Indians still take the precedence. They are allowed to purchase what they can from the Indians, but must turn it all in to the Company, and, if they need it, must buy it at Company's prices. The standard of value is the beaver-skin. One "made beaver," as they express it, is worth two shillings, or two marten skins. A man buys a dressed mooseskin, to make moccasins of, at its regular value of two "made beaver," or four shillings. He cannot set his wife at work making moccasins, but must sell it to the Company for what he paid the Indians, and buy it back for *twenty* shillings, which is the Company's selling-price. If he does not do this he is liable to lose all his past earnings which happen to be in the Company's hands, and take a flogging beside from the commander. Every effort is made, to make these men marry Indian wives; thus forcing them to remain in the country by burdening them with females whom they are ashamed to take back to civilization, and cannot desert. They perform a larger amount of manual labor for smaller pay than any other civilized people on the globe.

The hardships and exposures to which they are subjected are beyond belief. In fact, the whole system is one of the most exacting tyranny; and only in the north of Scotland could men of intelligence be found who would submit to it. The systematic way in which the white "servant of the Company" is ground down below the level of the Indians about him, is a degrada-

tion few could bear. They are not even furnished with good tools. The Hudson Bay axe is a narrow wedge, which an American lumberman would reject with contempt. The Hudson Bay knives — at least such as I saw at Fort Yukon — are so worthless that even the Indians prefer to buy files, and

Knife of Kutchin manufacture.

manufacture their own knives from them. The guns are all flint-locks of the most miserable description; and this rubbish must be bought at treble its value by the Hudson Bay voyageur, in a country where the axe and gun are a man's right and left hands! There is some comfort in reflecting that a few years will put an end to this. Free traders already pass through the greater part of the Hudson Bay territory without restraint, and they will not be long in reaching a district so rich in valuable furs as that of Fort Yukon.

The sun was so intensely hot that in the middle of the day we could do nothing, but during the cooler hours much of interest was added to my collection and my companion's portfolio. At noon, out of the direct rays of the sun, one of Greene's standard thermometers stood at 112° Fahrenheit. The men informed me that on several occasions spirit thermometers had burst with the heat. In the depth of winter the spirit falls sometimes as low as sixty-eight and sixty-nine below zero, making a range for the year of one hundred and eighty degrees Fahrenheit! Nevertheless, potatoes, turnips, lettuce, and other hardy garden vegetables mature during the short hot summer, and barley was said to have succeeded once, but only reached a few inches in height.

We were very well pleased to hear from an Indian runner that the boats were not far off. On the 26th of June, Messrs. McDougal, McDonald, and Sibbeston arrived with the bateaux. The latter were about forty feet long, nine feet beam, and drew two and a half feet of water. They are well adapted to the navigation of the Porcupine, which is full of shoals and sandbars, and they brought a load of nine thousand pounds each from La Pierre's House.

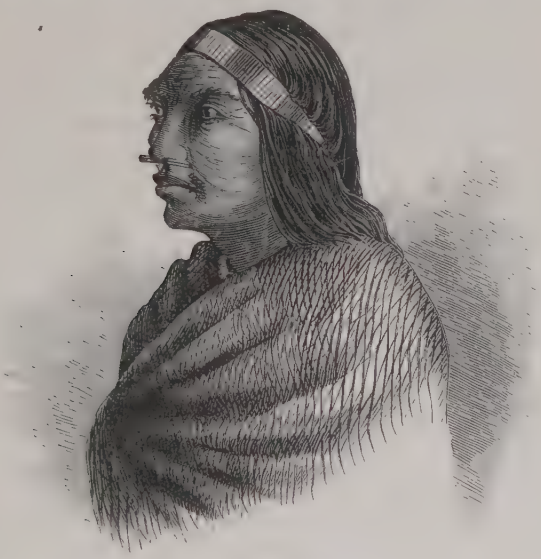
We invited the commander and Mr. McDonald to be our guests for the day, and did our best to provide a good dinner. We found them to be typical Scots, — quiet, reserved, cautious, but hospitably inclined. Antoine Houle the interpreter, who arrived with them, was of mixed French and Indian blood, and was a thorough voyageur. More independent than most of the Company's servants, he had his house to himself outside of the fort; and like many of his Indian cousins, deaf to the remonstrances of the missionaries, had provided himself with one more wife than is usual in civilized countries. This was the more excusable, as the poor fellow suffered from ossification of the knee-joint, and could do but little to help himself. His house was always open to every one, and was a noted resort of the Indians, with whom he was a great favorite. With them he could talk in their own dialects, while the usual mode of communication between the whites and Indians in this locality is a jargon somewhat like Chinook, known by the name of "Broken Slavé." The basis of this jargon, which includes many modified French and English words, is the dialect of Liard River. The native name of the tribe called Slavé is *Achéto-tinneh*, or "People living out of the wind."

The next business for Mr. McDougal, after storing his goods, was the annual trade. Every spring the Yukon, and other Indians who do not trade with the Russians, assemble at Fort Yukon, there await the arrival of the boats with the new supply of tobacco and goods, and then do their trading. After this is over, the furs are put into a large press, which is a conspicuous object in the yard, and pressed into bundles weighing about ninety pounds each. These bundles are covered with beaver-skins of the poorest class, and are pressed so solid by means of wedges that, even if dropped into the river, the water will not penetrate them. Each bundle contains a certain number of marten or fox skins packed in beaver; they are bound with rawhide cut in strips known as "babiche," and each bundle is called a "piece."

After the trade is over and the furs are packed, they are taken in the boats to La Pierre's House, and the boats return empty. Any remaining goods are laid aside, and sent down the river in the following spring to Nuklukahyét. During the remainder of the year but little trading is done, and months pass without an

Indian visiting the fort. A certain amount of tobacco is distributed among the men, and a certain amount is cached, in order that they may not be entirely without the article in the spring. The flint-lock guns sold by the Hudson Bay Company are preferred by the Indians to percussion guns, as caps are not always obtainable, while a flint may be picked up on any beach. These guns are valued at forty marten skins. They cost five dollars apiece, and the skins will average one hundred and fifty dollars in total value.

On the afternoon of the 27th a shout was raised that the Tananáh Indians were coming. On going to the beach, some



Sakhniti.

twenty-five single canoes were seen approaching. The occupants kept perfect time with their paddles, advancing in three platoons, and passed over the water as swiftly and beautifully as a flock of ducks.

Sakhníti, the chief of the Kutchá Kutchin, or Fort Yukon Indians, stood on the bank dressed in his gayest costume, with a richly embroidered blue blanket wrapped about him. He hailed the foremost canoes as soon as they were out of the current. After a harangue of a few minutes a fusillade was commenced by

the Indians on shore, and returned by those in the canoes, after which they landed. The Tenán Kutchin (people of the mountains), or Indians of the Tananáh, are known to the Hudson Bay men as Gens des Buttes. They are without doubt the tribe of all others which has had the least to do with the whites. No white man has yet explored the river on which they live. We only know that its head-waters are not very far from Fort Yukon, and that its general course is parallel with the Yukon. It is represented as running between mountains, and obstructed with rapids and cascades. The Tenán Kutchin are regarded with fear by the adjacent tribes, and are doubtless a wild and untamable people. Their numbers are supposed not to exceed one hundred and fifty families. Of their mode of life nothing is known, except that they obtain their subsistence principally by hunting the deer. No women accompanied this party. They were all dressed in the pointed parkíes, which were once the universal male dress of the family of Tinneh, and from which they have been called Chippewayans, meaning "pointed coats." These coats were ornamented in the same manner with beads or quills as the dress of the male Koyúkuns, already described. Their parkies and breeches were smeared with red ochre. All wore the dentalium nose-ornament previously noted. The most striking peculiarity about them was their method of dressing their hair. Allowed to grow to its full length, and parted in the middle, each lock was smeared with a mixture of grease and red ochre. These then presented the appearance of compressed cylinders of red mud about the size of the finger. This enormous load, weighing in some of the adults at least fifteen pounds, is gathered in behind the head by a fillet of dentalium shells. A much smaller bunch hangs on each side of the face. The whole is then powdered with swan's-down, cut up finely, so that it adheres to the hair, presenting a most remarkable and singular appearance. The dressing of grease and ochre remains through life, more being added as the hair grows.

The fat is soon rancid, and a position to leeward of one of these gentry is highly undesirable. This method of dressing the hair is peculiar to the men. Among civilized nations such practices are confined to the fairer sex. The gulf between pomatum with gold powder and tallow with red ochre is not as wide as it seems at first sight; and the addition of swan's-

down is a suggestion which is worthy of consideration by the ladies.

The tribes now represented at the fort, beside the Kutchá and Tenán Kutchin, were the following: the *Natché Kutchin*, or Gens de Large, from north of the Porcupine River; the *Vuntá Kutchin*, or Rat Indians, from farther up the Porcupine; the *Han Kutchin* (wood people), or Gens de Bois, from the Yukon, above Fort Yukon; and finally, the *Tutchóne Kutchin* (crow people), or Gens de Foux, from still farther up the Yukon.

The tribes resembled each other in appearance and dress. They all belong to the family of Tinneh, which is their name for "people." Their habits of life differ somewhat according to locality, but none have settled villages, — carrying their deerskin lodges wherever food is most abundant.

Those who live in mountainous districts, hunting the active deer from summit to summit, are notably the most savage and unruly. Those who live by hunting the more phlegmatic moose, which inhabits the lowlands, are much more docile. Their languages are similar in construction and roots, though not in the forms of many words. The dialect of the Upper Tananáh assimilates closely to the Kutchin languages, while that spoken near Nuklukahyét resembles more nearly the Ingalik. The Tananáh Indians brought the news of the body of a white man having been found in the river below.

A sad event had happened at Fort Yukon in the early spring. A young man named Cowley had been acting as clerk at the fort, and at the time of the freshet was shooting geese on an island across the river. He had crossed in a large canoe with one of the men employed at the fort. He was a new arrival, and not accustomed to the mode of life, and was therefore subjected to many practical jokes from the old voyageurs. Wishing to return, he could not find the canoe, and supposing that some trick had been played upon him, the two embarked in a very small single canoe and attempted to cross. The river was full of ice, and nothing more was ever seen of them. The wrecked canoe which we had passed in the Ramparts was doubtless the one in question. The Rev. Mr. McDonald, being informed of the Indian rumor, immediately started down the river with a companion, to investigate the matter, and if necessary to perform the last rites over the remains.

Among the chiefs at the fort was a man of remarkable intelligence, who had been of great service to the whites on various occasions. He went by the name of Red Leggins, and possessed great influence among the Indians. I applied to him for assistance in obtaining ethnological specimens and vocabularies, and improved the opportunity by taking his portrait.

On the 29th of June we were called out by the Indians, who said that Ketchum was coming. Two canoes were seen in the distance, and before long we had the gratification of shaking the hands of our fellow-explorers, and offering them our hearty congratulations on the complete success of their arduous explorations. They had arrived safely at the site of Fort Selkirk, and brought back as a trophy a piece of one of the blackened timbers which remained. They reported the river to be open to navigation up to that point; but just beyond it was a rapid, where a portage would be necessary. The country was a fine one, well timbered, abundantly supplied with moose and game, and inhabited by friendly Indians. An enumeration of the obstacles which they had encountered would be out of place here, but it may fairly be said that only extreme patience, endurance, indefatigable energy and courage, could have surmounted them. They were principally, however, not such as would impede a well-provided party of regular explorers. We "laid ourselves out," in California parlance, to get up a good dinner for our friends; what with this and the interchange of news and information, it was well into the next day before we sought our pillows.

Mr. McDonald returned, having determined the body to be that of Ward, Cowley's companion. He had buried it near the point where it was found.

After the trade, which occupied several days, we obtained the necessary goods to pay our Indians for the trip. To those who had come up with us from Nuláto we gave each a gun; the Nuklukahyét man received a good capôte; and we gave a knife, shirt, and powder-horn to Bidárshik.

Our diet while at the fort consisted chiefly of boiled dried meat, which when cooked resembles in flavor and stringiness a boiled skein of yarn.

Mr. McDonald during our stay performed several services among the Indians. He was an earnest and well-disposed man,

RED LEGGINS.

a fair type of most missionaries to the Indians. His discourses were rendered into broken Slavé by Antoine Houle. In the evening the Indians, old and young, gathered in the fort-yard and sang several hymns with excellent effect. Altogether, it was a scene which would have delighted the hearts of many very good people who know nothing of Indian character; and as such will doubtless figure in some missionary report. To any one who at all understood the situation, however, the absurdity of the proceeding was so palpable that it appeared almost like blasphemy.

Old Sakhníti, who has at least eighteen wives, whose hands are bloody with repeated and most atrocious murders, who knows nothing of what we understand by right and wrong, by a future state of reward and punishment, or by a Supreme Being, — this old heathen was singing as sweetly as his voice would allow, and with quite as much comprehension of the hymn as one of the dogs in the yard.

Indians are fond of singing: they are also fond of tobacco; and for a pipeful apiece you may baptize a whole tribe. Why will intelligent men still go on, talking three or four times a year to Indians, on doctrinal subjects, by means of a jargon which cannot express an abstract idea, and the use of which only throws ridicule on sacred things, — and still call such work spreading the truths of Christianity?

When the missionary will leave the trading-posts, strike out into the wilderness, live with the Indians, teach them cleanliness first, morality next, and by slow and simple teaching lead their thoughts above the hunt or the camp, — then, and not until then, will they be competent to comprehend the simplest principles of right and wrong. The Indian does not think in the method that civilized men adopt; he looks at everything as "through a glass, darkly." His whole train of thought and habit of mind must be educated to a higher and different standard before Christianity can reach him.

The Indian, unchanged by contact with the whites, is in mind a child without the trusting affection of childhood, and with the will and passions of a man. Read by this standard, he may be fairly judged. One fact may be unhesitatingly avowed: if he can obtain intoxicating liquors he is lost. Neither missionaries nor teachers can save him while it is within his reach. A general

glance at the condition of the American Indians at this time conveys only one idea, which is, that the trader outstrips all restraints and that the whole race is irrevocably doomed.

In dealings with them they appreciate justice, but do not practise it, and they respect the strong arm alone. It has often been asked why the Hudson Bay Company has succeeded in its intercourse with the aborigines without the misery and bloodshed which has stained our western frontier. The inference has been as often drawn that it was owing to the justice which was characteristic of the Company's dealings with the Indians. That there is no foundation for this opinion I propose to show.

In the first place, while the Hudson Bay traders have had few contests with the Indians, still, in proportion to the number of whites, full as many Indian outrages have taken place as in the Western United States. The following from the pen of Bernard R. Ross, Esq., of the Hudson Bay Company, is pertinent to the question.* Speaking of the Eastern Tinneh, he says: —

"As a whole, the race under consideration is unwarlike. I have never known, in my long residence among this people, of arms having been resorted to in conflict. In most cases their mode of personal combat is a species of wrestling, and consists in the opponents grasping each other's long hair. This is usually a very harmless way of settling disputes, as whoever is thrown loses; yet instances have occurred of necks having been dislocated in the tussle. Knives are almost invariably laid aside previous to the contest. Some of them box tolerably well; but this method of fighting does not seem to be generally approved of, nor is it much practised. On examination of the subject closely, I am disposed to consider that this peaceful disposition proceeds more from timidity than from any actual disinclination to shed blood. These Indians, whether in want or not, will take the life of any animal, however useless to them, if they be able to do so, and that they can on occasion be sufficiently treacherous and cruel is evinced by the massacre at St. John's, on Peace River, and at Fort Nelson, on the Liard River. It may not be out of place here to give a brief account of the latter catastrophe.

"In 1841 the post of Fort Nelson, on the Liard River, was in charge of a Mr. Henry, a well-educated and clever man, but of a hasty temper and morose disposition. While equipping the Indians in the autumn he had a violent dispute with one of the principal chiefs of the

* From the annual Report of the Smithsonian Institution.

Bastard Beaver Indians resorting to the establishment, who departed greatly enraged, and muttering suppressed threats, which were little thought of at the time. In the winter a 'courier' arrived at the fort to inform the whites that there were the carcasses of several moose deer lying at the camp ready to be hauled, and requested dog-sleds to be sent for that purpose. Mr. Henry, never in the least suspecting any treachery, immediately despatched all the men and dogs that he could muster. On their way out they met an Indian, who told them that they had better turn back, as the wolverines had eaten all the meat. This information, as it turned out, was given from a friendly motive; but fear of ulterior consequences to himself prevented the man from speaking more plainly. The fort interpreter, who was of the party, took the precaution to carry his gun with him, and when they drew near to the path which led from the bed of the river to the top of the bank, where the Indians were encamped, he lingered a little behind. On the others mounting the ascent, they were simultaneously shot down, at one discharge, by the natives, who were in ambush awaiting them. When the interpreter heard the shots he was convinced of foul play; he therefore turned and made for the fort as quickly as he could, pursued by the whole party of savages, whose aim was to prevent him from alarming the establishment. The man was a famous runner, and despite the disadvantage of small snow-shoes, which permitted him to sink more deeply than the Indians, who, on their large hunting snow-shoes, almost skimmed over the surface of the snow, he would have reached the houses before them, had not the line that confined the snow-shoe on his foot broken. His enemies were too close upon him to allow time for its repair; so, wishing to sell his life as dearly as possible, he levelled his gun at the nearest Indian, who evaded the shot by falling upon his face, whereupon the whole party despatched him. After perpetrating this additional murder the band proceeded to the fort, which they reached at early dawn. A poor old Canadian was, without suspicion of evil, cutting fire-wood at the back gate. His brains were dashed out with their axes, and they entered the establishment, whose inhabitants, consisting, with one exception, of women and children, were buried in profound repose. They first opened Mr. Henry's room, where he was asleep. The chief pushed him with the end of his gun to awaken him. He awoke, and seeing numerous fiendish and stern faces around him, made a spring to reach a pair of pistols that were hanging over his head; but before he could grasp them, he fell a bleeding corpse on the bosom of his wife, who, in turn, became a helpless victim of the sanguinary and lustful revenge of the infuriated savages.

Maddened by the blood, they next proceeded to wreak their vengeance on the innocent women and children, who expired in agonies and under treatment too horrible to relate. The pillage of the stores was the next step, after which they departed, leaving the bodies of the dead unburied. No measures further than the abandonment of the fort for several years were taken by the Northwest Company, to whom the establishment belonged, to punish the perpetrators of the atrocious deed; yet it is a curious fact that when I visited Fort Liards in 1849, but one of the actors survived, all the others having met with violent deaths, either by accident or at the hands of other Indians. This man, who was at the time only a lad, confessed to have dashed the brains out of an infant, taking it by the heels and swinging it against the walls of the house."

This, and the long list of forts pillaged by the Indians or abandoned on account of their hostility* by the Hudson Bay Company, is sufficient to show that their occupation has not been wholly peaceful. But little has been said of these outrages, as it was evidently for the interest of the Company that they should not be talked about.

It must also be noticed that the policy of the Company has always been to put as few men as possible in these trading-posts. A very few white men can go in safety where a large body would instantly excite hostilities. After the fort has been in operation for years, and a demand created for tobacco and other articles, the Indians feel that it is to their advantage to have them there, and the whites in small numbers no longer excite their jealousy. Then, whenever a new post was established, the influential chiefs were handsomely provided with presents, the whites in the fort were kept in subjection to the extent already described, going about in rags, while the Indians obtained broadcloth and clothing of every description for their furs. This obvious superiority pleased the vanity of the savage. Little or no retribution followed the outrages previously mentioned. In some cases presents were plentifully distributed to appease their anger, and any offence toward an Indian was severely punished. The self-respect of the white man was sacrificed to the desire of obtaining furs. Lastly, the most warlike and bloody tribes had been reduced to comparative quietness in the early colonial wars.

* This includes Forts Selkirk, Pelly Banks, Dease, Frances, Babine, Peace River, and others, — all burnt or pillaged and abandoned.

On the other hand, the Indians of the western plains were races more vigorous and active than their northern congeners. They were met by large bodies of pioneers, bent on settling and occupying the territory. Indian outrages, provoked or unprovoked, met with speedy return from the colonists, and matters were still further complicated by the recognition of the hypothetical authority of the chiefs by the government. Promises were made by the former, of which they had not power to enforce the fulfilment by the Indians, who were erroneously supposed to obey them. The pernicious system of making presents to the chiefs, the introduction by traders of intoxicating liquors, and, above all, the failure of the government in any instance to enforce respect by its strong arm, have created an animosity which will die out only with the Indians themselves.

It would seem brutal to advise force as a civilizer, but the Aleuts, who were thoroughly crushed and subjugated by the early Russian traders, and subsequently by the Russian American Company, are to-day the only large body of aborigines in America who give any promise of ultimate civilization.

After the trade was over, we had an opportunity of looking at the results. It was a sight seldom witnessed by others than traders. The large loft over the store-house was literally overflowing with valuable furs. Among other trophies of the chase were forty-five silver foxes. The commander confessed to five thousand sables purchased the previous year. The men in the fort said that the amount was nearer eight thousand, with half as many beaver, and five hundred foxes of all kinds. Few otter, and very few mink are obtained here, but black bearskins, dressed mooseskins, and black and silver foxes are especially abundant. The value of the furs annually obtained at this post cannot be estimated as less than fifty thousand dollars.

We decided to start down the river on the 8th of July. The women in the fort were very busy filling orders for moccasins, and other specimens of their work, which we designed for friends below. I was indebted to one of the men for a fine pair of otter-skin mittens, which have since done me good service. Ketchum decided to take a small boy, Jean Baptiste by name, who was well qualified to act as interpreter with several tribes of Indians. He spoke comparatively little English, but

understood Canadian French, having a little Canadian blood in his veins.

The commander coolly proposed to Ketchum that he should kidnap, iron, and send back to Fort Yukon the unfortunate runaway McLeod! However, we let it pass without remark, for we were under great obligations to Mr. McDougal for hospitality shown us, and assistance rendered in paying our men. Ketchum arranged it so that, in going back, Whymper and Mike should take the bidarrá, while he and I had each a large birch canoe, with Indians fore and aft to paddle it. Having got everything on board, we shook hands and bade our kind entertainers good by. About two o'clock in the morning of the 8th we left Fort Yukon behind us. A tremendous firing from the assembled Indians announced our departure, and we returned the compliment to the best of our ability.

Travelling down stream is always easy. Our journey seemed easier still as, in the broad channel, out of reach of the mosquitoes, we drifted on without impediment at the rate of four or five miles an hour. Points appeared, were passed, and faded out of view, almost without our perceiving it; while between them, going up, we had passed many hours of hard paddling in the hot sun. No sand-bars or shoal water obstructed our progress anywhere, except where the swift current brought us close to the bank. We tied our canoes together, and floated down, sometimes sleeping, and often in a revery which recalled the lotus-eaters of the Nile. We did not camp anywhere. We boiled the chynik and cooked our meals ashore, and, pushing out into the broad stream, ate them while calmly drifting with the current. Sometimes the mosquitoes would try to follow us, and we could see them vainly endeavoring to make headway against the fresh breeze usually to be found in midstream. They were always unsuccessful, and we discarded our nets and laughed at the discomfited insects. About three o'clock in the afternoon of the 9th we re-entered the Ramparts, and here, in the swifter current, our progress was more rapid.

Large fires were burning in the forests, and on the sides of the hills. They had been kindled by some neglected camp-fire, and spread rapidly over the mossy sod and leaves dried by the midsummer sun. The smoke hung over all the country, obscuring everything with a lurid haze.

About six o'clock on the afternoon of the 10th we passed the Rapids. The water had fallen, and we should not have known the place but for the Indians. One of the party refused to believe it. A long island of rock, smoothed by the water, divided the river, which flowed smoothly but with great swiftness on either side. The riffle which had attracted most of our attention had been caused by an insignificant ledge of rock, now bare. The difference between the level of the ice in winter and extreme high-water mark, as indicated on the rocks, cannot be much less than thirty feet. Some distance below we found the Nuklukahyét chief and his people fishing for salmon with large hand-nets. The little canoes sailed down stream with the current, the Indians keeping in line like soldiers, and joining in a monotonous but not discordant chorus. At a given signal, all plunged their nets below the surface, and on raising them a great salmon frequently was seen struggling in the meshes. In this case all joined in a derisive shout and song. The dried meat which the chief had promised was not forthcoming. A "cash" business is the only safe one with Indians. They never pay old debts, giving as a reason that the articles purchased are already worn out.

We had a good deal of amusement chasing the young geese. Their wing feathers not being grown, they could not fly; but they were very expert divers, and were beneath the water almost as soon as the cap flashed. We obtained quite a number, and found them very delicate eating. We passed numerous fishing-camps, where the banks were red with the salmon, split and hung up to dry.

About eight o'clock on the evening of the 12th we arrived at the bluffs above Nuláto. Here old Yagórsha, the Yakút, was fishing, and hailed us from the bank. He told us that the whole of Russian America had been bought by an American company, and that an American ship and steamer were already at the Redoubt! The pleasure which we felt at this intelligence was marred by doubts of its truth; but, passing on, about ten o'clock we arrived at Nuláto. Here the air resounded with the discharges of cannon, which welcomed our return. Indians and Russians vied in the expenditure of gunpowder, and the enthusiastic Kurílla used up all his ammunition in returning the salute.

Our delight was soon damped, however, by an incomprehensible order which awaited us. This instructed us to trans-

mit, without delay, all movable property belonging to the Telegraph Company to the Redoubt. Various rumors about the sale of the country were current among the Russians. Nothing was certain, and one of them remarked to me with a sneer, "Perhaps, Gospodin Doctor, it is the Americans, and not the Russians, who are about to march!"

The Koyúkuns occupied the beach, fishing, and with characteristic insolence took fish out of the Russian nets before their eyes. The latter were too few in number to resent the insult, the bidárshik and two men being absent at the Redoubt.

We proceeded to carry out our instructions, purchasing the large Russian bidarrá, putting all the collections and other valuable property aboard, and hiring six men to accompany us to the sea-coast. Near midnight, July 15th, we started down the river, full of anxiety, not knowing what changes were at hand.

The river was lined with Indian fishing-camps laying in the winter supplies of úkali. Had we possessed the necessary trading-goods and transportation, we might have bought thousands of salmon.

On the night of the 17th we saw the first star visible since the end of April. On the 19th of July, about eleven o'clock at night, we felt a shock as if we had struck a snag. Next morning we arrived at the Russian mission of the Greek Catholic Church. There we learned that there had been an earthquake shock in the night, of sufficient severity to throw down books and other articles from the shelves on which they were placed. The priest, or "Pope" as the Russians call him, with most of the Russians who belonged here, was absent at the Redoubt. In this part of the river the channel is deep enough for vessels of any size. It is extremely broad, the low left bank being sometimes barely visible. Sloughs and innumerable islands characterize this portion of the Yukon.

The weather was much of it hot, cloudy, and disagreeable, with occasional rain, forming a marked contrast to that which we had experienced farther inland. The white-winged gull (*Larus leucopterus*) replaces the familiar silver gull (*L. argentatus*) of the Upper Yukon. On the morning of the 22d we saw numerous leopard seal (*nerpa*) sporting in the river. Seal have been

occasionally seen at Nuláto, and on one occasion a white whale or *Beluga* was killed only a few miles below Nuláto, at least four hundred miles from salt water. About five o'clock the same day we reached the post of Andréaffsky, occupied by two men only, one of them a native. The other received us as hospitably as his means would allow, and spread us a repast of salted salmon and bread. We made his heart glad by a present of some tea, as his own supply was exhausted, and borrowed his assistant to guide us to the Uphóon, or northernmost mouth of the Yukon, by which the sea-coast is reached. A strong breeze arose, and we scudded before it, reaching the Uphóon and dismissing our guide about three o'clock the next morning.

About noon we reached a Russian house at Kútlik, whose inmates were absent at the Redoubt. Five channels leading in different directions misled us, and we pulled nearly ten miles up a small river, until the tide turned and we saw our mistake. The next trial was more successful, and we soon reached Pastólik, an Eskimo village opposite the Uphóon-mouth, where we camped ashore for the first time since leaving Nuláto.

The next morning we divided our load, hiring another bidarrá and some Unalígmut Eskimo to assist us in our voyage along the sea-coast to St. Michael's. At noon we reached Point Románoff, the Cape Shallow Water of Cook. This is the only hill or landmark north of Cape Románzoff on the coast. Here is a small village of a few huts, where we purchased some fish and game.

About two o'clock in the morning of the 25th we reached the southeastern entrance of the Canal between St. Michael's Island and the mainland. Here we stopped and arrayed ourselves in apparel more suitable for civilized society. We tracked through the Canal, hoisted our flags, and bore away for the Redoubt with a light wind. Here we arrived about noon of July 25th, finding all the members of the exploring and constructing parties gathered to receive us. The news was soon told.

The Atlantic cable was a triumphant success. The United States were in negotiation for the purchase of Russian America. Our costly and doubtful enterprise was abandoned, and the bark Clara Bell was soon expected, to take all hands to San Francisco. The ill-fed and hard-worked constructors hailed their

deliverance with joy; but the weather-beaten explorers, with their carefully matured plans for more thorough and extended explorations during the coming year, felt a regret and disappointment which could hardly be over-estimated, as with a few words these prospects were destroyed. There was, of course, nothing to be done but to pitch our tents on the beach, and there await the return of the vessel, now absent in search of the parties which had been left at Grantley Harbor, Bering Strait.

CHAPTER IV.

Arrival of the vessel. — Arrange to remain in the country. — Departure of the Clara Bell. — Mushrooms. — Plans for the season. — Start for Unalaklik. — The Major's Cove. — Voyage to Kegiktowruk. — Description of the casine. — End of the old bidarra. — Leave Kegiktowruk. — Crossing the bar of the Unalaklik River. — Send back for the goods. — Trip to Ulukuk. — Death of Stareek. — Bears and bear-hunting. — Geological reconnoissance, and discovery of fossils. — Return to Unalaklik. — Purchasing winter supplies. — Innuit of Norton Sound. — Tribes, physique, games, kyaks. — Disposition, morality, marriages, and infanticide. — Treatment of the women, and work allotted to the sexes. — Dress, labrets of the different tribes. — Property, method of computation, and map-drawing. — Fire-drills. — Weapons of bone, flint, and ivory. — Guns and trading. — Intercourse with Indians, and boundary lines of their territory. — Shamanism. — Patron spirits. — Interment of the dead. — Habits, and means of gaining subsistence throughout the year. — Dances and festivals. — Arrival of my new bidarra. — Sudden illness, and departure for the Redoubt. — Storm and detention at Kegiktowruk. — Proceed to the Redoubt on foot. — Return to Unalaklik. — Kill a deer. — Cowardly abuse of the natives by the Russians. — Kamokin and his barbarity to the sick. — Deaths in the village. — Making dog-harness.

A LONG month passed by and brought no signs of the ship. A party of seven bidarrás, manned with Okeeógemuts and other Bering Strait Innuit, arrived at St. Michael's. They brought the news that the Grantley Harbor parties had safely embarked, and departed. We began to fear that some accident had happened to the vessel. Our daily walk was invariably to the northeast bluff, whence we could look seaward. A pound of tobacco was promised to the first person who should see the ship. About three o'clock in the afternoon of the 18th of August an old woman came breathless from the bluff, saying the ship was coming. All started to confirm the report, which proved true, and the venerable Martha was made the recipient of more tobacco than she had ever before possessed.

It was the Clara Bell, and about eight o'clock she anchored in the bay. I had by this time become pretty well versed in colonial Russian, as spoken in the territory. I had also some knowledge of the Innuit and Indian dialects, and understood the mode of life

necessary in the Yukon Territory. I had formed my plans, and immediately took the opportunity of explaining them to Major George M. Wright, adjutant of the Expedition, and now in charge of all the men and materials which were to be shipped on board the Clara Bell.

A pretty thorough reconnoissance had been made of the geology and natural history of the Yukon above and at Nuláto, and on the shores of Norton Sound. The Lower Yukon and the delta had yet to be examined. I felt unwilling that the plans of Mr. Kennicott, so far carried on successfully, should be left uncompleted. I therefore proposed to carry them out alone, and at my own expense, and relied on Major Wright for the co-operation necessary to accomplish this arrangement. With his characteristic politeness he agreed to do what lay in his power. He could leave me no provisions, as they were already short of them. He could sell me, at the Company's prices, a small amount of trading-goods, and he would pay a certain proportion of the salary due me from the Company into the hands of Stepánoff (the chief factor of the Russian American Company at St. Michael's), who could furnish me with some trading-goods and a limited supply of provisions; while for the rest I must depend upon the natural resources of the country.

Explaining to Stepánoff that I had no desire to interfere with the fur-trade, he expressed himself willing to co-operate with me, and the proposed arrangement was carried into effect.

To my companions of the previous year, and to the officers of the vessel, I was greatly indebted for many articles useful in the country, and otherwise unattainable. The boy who had been brought from Fort Yukon was left in my care to be sent home. My mail was made up for transmission by the vessel to San Francisco; the Reports on the Medical Department and the Scientific Corps were placed in the adjutant's hands. The collections of the previous year were also sent aboard. I depended, for the means of reaching civilization again, on some passing trader or the annual store-ship of the Russians. On the 23d of August everything was concluded, and I went on board and bade all hands good by. I returned, with the boy Johnny and Stepánoff, in the Russian boat. About four o'clock in the afternoon the Clara Bell stood out to sea.

As I saw her white sails disappear in the distance I realized more thoroughly the loneliness of my position, and that I was the only person in the whole of that portion of the territory who spoke English. If I needed companions, I must seek them among alien convicts or Indians, in a foreign tongue.

Returning to my room in the fort, I soon stifled any feeling of regret by busying myself in putting on paper a brief sketch of my plan of exploration for the coming year.

Stepánoff called me, saying that there was no meat or other fresh provisions in the fort, and we must go out and get something for dinner. At first I took down my gun, but he informed me that it was unnecessary, and after walking a short distance he pointed out various fungi, which he assured me were eatable. They were of two or three species, all poisonous in our climate; but in this extreme northern region they proved to be innocuous and eatable, though quite tasteless.

During our walk we came to a definite conclusion on the subject of fur-trading. Stepánoff said that he did not believe in the rumor which prevailed as to the sale of the country; that his duty to the Russian American Company would compel him to prevent any one from trading except the authorized employés of the Company; that when the official information should arrive I might trade as much as I chose, but until then I must refrain. I assured him that trading was not my object in remaining in the country, and that I would not do anything of the kind until he had received definite information. The latter might be expected, if at all, by a midwinter courier from Nushergák to the Kólmakoff Redoubt on the Kuskoquím. Such couriers had been sent on rare and important occasions, and a mail was always sent to Nushergák from St. Michael's every December.

Stepánoff begged me to consider myself his guest while at the Redoubt, and offered to have any orders sent to Nuláto in regard to the building in which we had spent the previous winter, if I desired to use it during the coming season.

My plans were as follows: First, to examine the rocks along the shores of Norton Sound and across the portage as thoroughly as possible. Next, to take my trading-goods and such provisions as I could obtain to Nuláto; spend the winter in making explorations in that vicinity, and, if possible, make a winter visit to Kot-

zebue Sound; to take a boat across the portage and descend the Yukon in the spring, examining the rocks carefully, and making as thorough collections as possible of specimens of natural history; to spend some time at the Yukon-mouth; and finally return by sea to the Redoubt, and there await some opportunity of getting a passage to Sitka or San Francisco with the collections.

I therefore requested Stepánoff to order Iván Pávloff to have the house put in thorough repair, the seams calked, floor put in order, and the peechka replastered. The building at Fort Kennicott was too large and too cold to be readily made habitable. The orders were sent by Kurílla, whom I engaged as my permanent assistant. He, with Antóshka and Tékunka, started for Nuláto *via* Unalaklík, in the three-holed bidárka in which Dyer had descended the Yukon. Kurílla was to get our dogs and sleds together, hire Indians, buy úkali for dog-feed, and meet me at Unalaklík as soon as the Yukon was ice-bound. Then we would proceed together to Nuláto. I furnished him with the necessary trading-goods for purchasing dog-feed and hiring Indians, and he departed in high spirits at the responsibility intrusted to him.

One day when Stepánoff was away shooting, on the marshes about the Canal, one of the Russians came to me with a sable, for which he wanted alcohol. I refused him, and added that I had promised Stepánoff not to purchase furs, and should keep my word. The meaning of truth and honesty is incomprehensible to these degraded wretches, and he still urged me, saying Stepánoff would never hear of it. As he did not take any notice of repeated refusal, I became at last so angry that I pitched him heels over head out of the door and down the steps, into the muddy courtyard, greatly to the amusement of old Martha, who had just previously brought in some work, and was waiting for her pay.

Life among the natives is far preferable to being surrounded by white men of such a despicable class. It is not to be wondered at that the knout and the brand were formerly in use in Russia. Nothing else would seem capable of inspiring a respect for the law in such minds.

My time was passed in running lead into balls, adding to the collection, and making general preparations for starting for Una-

laklík as soon as any natives should arrive from Pastólik, where they were hunting the beluga.

I accompanied Stepánoff on several of his shooting expeditions in the Canal, and secured a large number of geese, ducks, and swans. These are salted, and form an acceptable addition to the winter fare.

On September 22d I purchased my supplies, including six hundred pounds of flour, twenty-five of tea, fifty of sugar, and a variety of trading-goods. I also laid in a supply of crockery — a mug, plate, and bowl apiece — for myself, Johnny, and Kurílla. China ware is more precious in this part of the world than silver plate in more civilized localities. I also purchased fifty pounds of sukarée, and some large úkali for use on the road. Several Máhlemuts having arrived, I engaged them to accompany me to Unalaklík. I proposed to take the old bidarrá in which we had descended the Yukon from Nuláto. I had engaged to have a small bidarrá made at Pastólik and forwarded to me for use the coming spring; but it had not yet arrived. The old one was very large, and the lashings and covering very rotten. I hardly dared risk my invaluable trading-goods; but, taking counsel with some of the Innuit, we concluded that we could probably reach Unalaklík in safety with it.

My crew was composed of Johnny, a Máhlemut called Myúnuk, an old man whom I called New-Years, and a young Kaviágemut. The latter had an extremely stupid appearance, but was an excellent hunter.

On the 23d of September I put my goods on board, took a mail for the Russians at Unalaklík, and put to sea. The wind was hardly fair, and rather light, and I was obliged to beat across the southeast arm of the Sound, and put into the Major's Cove. I had hoped to reach Kegiktówruk, but the wind was adverse, and so high I could not risk it. Having pitched our tent under the shelter of the hill, I sent Johnny off to shoot ptarmigan, and rigged some fishing-poles, in hopes to catch some small fish, of a species known here as *waúch-ne*, a kind of tom-cod. Our success was not very great, but we got a mess for supper, and Johnny returned with an arctic hare which had already donned its winter coat of white.

The next day the wind was still high, and it was impossible to

get away. The anchor dragged so much that I was obliged to haul the bidarrá up on the beach. Our sail had proved too small, and we occupied ourselves in sewing on a strip of drill on each side. Having experienced the difficulty of transporting heavy goods by sleds to Ulúkuk, I hoped to get them to that point by water; but the ice was already forming in the ponds on the tundra, and I began to fear that the Unalaklík River would be frozen over before my arrival. The next day the weather was equally bad, and we were compelled to remain. Game and fish were both very scarce, and we lived principally on sukarée and tea, as I had no bacon.

On the 26th the wind was very variable and the waves very high. Toward noon it came from the westward, and against the wishes of the men I decided to start. Just as we left the cove some tremendous rollers came in, but we rode over them safely, and New-Years remarked, "The far-off wind has died away." Looking out to sea, I saw that the rollers mentioned above were the last, and the sea was quite smooth.

The wind grew fresher and fresher, being nearly a-beam. The coast between the cove and Kegiktówruk is rocky, with no landing-places. The wind increased and rain came in squalls. The darkness rapidly closed over us and the clouds were so heavy that the land was indistinguishable. For three hours I held the tiller, almost blinded by the rain, fearing every moment that the wind would haul ahead and drive us on the lee shore; my only guide in steering was the white line of breakers on the rock-bound coast. We passed a rocky point, known as Pallonoi or Burning Point, in safety, and about half past eight the moon suddenly broke through the clouds, revealing the three rounded hills which lie back of Kegiktówruk. We pulled into the cove, and I sent up to the village to obtain help in hauling up the heavy boat, but the inhabitants had gone to sleep or refused to come. We did our best to put her in safety, and went up to the casine, where we boiled the chynik and turned in.

The Kegiktówruk casine is the largest in the country. The annexed section gives an idea of its construction. Its area is about twenty-five feet by thirty, and its height fifteen feet from floor to smoke-hole. The entrance is similar to that of the ordinary houses, but at A is a second opening, by which the cavity beneath

the floor may be reached. In the middle of the floor is a hole (B) where, during their dances, the performers come up from below, not entering by the ordinary door at I. A portion of the floor about twelve feet square (FF) is composed of planks, which may be removed when it is desired to build a fire on the earth beneath. Broad planks about three feet and a half above the floor form seats (S) where the spectators may place themselves. The opening (L) in the roof is for the admission of light and egress of smoke. There are no other windows. The entrance (I) is usually closed by a hanging bearskin. The sides are of logs split in two and placed on end in the earth with the flat side inward. The roof is supported by large logs laid across so as to support each other. These are covered by a layer of small timbers, split, or hewn flat on one side; and the latter are

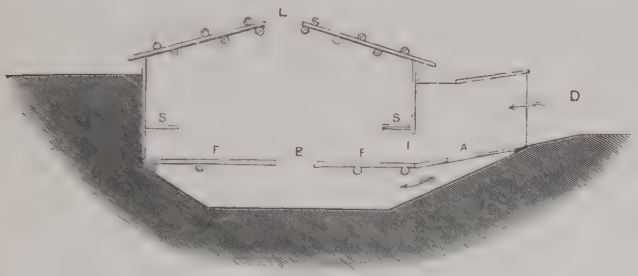


Diagram of Innuit casine.

kept in place by large timbers laid over them outside and attached by a saddle-joint at the four corners of the roof. The latter is covered with straw, and the straw with earth, pounded down hard, so as to be waterproof. There is not a nail or a pin in the whole structure, which is of the most solid description. Some of the logs are two feet in diameter, and the broad seats on each side, previously referred to, are each composed of a single plank forty-four inches wide, thirty feet long, and four inches thick. These enormous planks are from drift-logs, and were hewn with the stone axes of the natives.

I was informed that, the old casine being decayed, all the Innuit of Norton Sound had joined in building the present one. Many logs were towed from distant parts of the coast. The whole work had occupied six seasons in construction, and had been standing about seven years.

The annexed sketch of the village was taken on the spot. On the right is the casine. There are several ordinary winter houses, which are on the brow of a high bank. Caches are scattered about, and stages, on which the kyaks are elevated out of reach of the dogs. In the engraving, the kyaks are represented too much curved upwards, fore and aft. They are nearly straight, except at the bow.

At the left of the houses is a mass of perpendicular timbers, projecting from the ground. This was the dwelling of an old couple, who died in the summer while the other inhabitants were away. Returning from the chase, rather than touch the bodies, they broke down the house over them, and filled it in with earth; a few projecting uprights are their only monument.

There is no beach, the cove is shallow and full of rocks, and the skin-boats must be hauled up on ways built for the purpose, of logs. The village is a very dirty one. Travellers are usually detained there by adverse winds. The inhabitants have no reputation for honesty, and it is in every respect the meanest place on the Sound. The principal support of the inhabitants is the seal-fishery, but in the fall reindeer abound in the vicinity. Our young Káviak started in search of deer, as the weather would not permit of our continuing the voyage. We started with a fair breeze about noon, but just as we had got well out of the cove the wind shifted dead ahead, and we had to put back.

The boat made so much water that I suspected a hole, and unloaded her. The Káviak and New-Years were away, and My-únuk was sick; so I had an hour's hard work unloading her alone. I called some of the natives who were looking on to help turn her over. As soon as we raised one side the whole frame gave way, and the sides of the boat shut together like the leaves of a book! The sealskin lashings were quite rotted away, and only the weight of the goods had kept her in shape. Here was a quandary! There was only one bidarrá in the village, and she was very small and narrow. She belonged to an old man, who saw his advantage and used it. After long persuasion I induced him to lend her to me to take my goods to Unalaklík. He required for her hire an enormous price, more than the boat had cost him originally. He demanded his pay in advance, and his

KEGIKTOWRUK IN THE FALL.

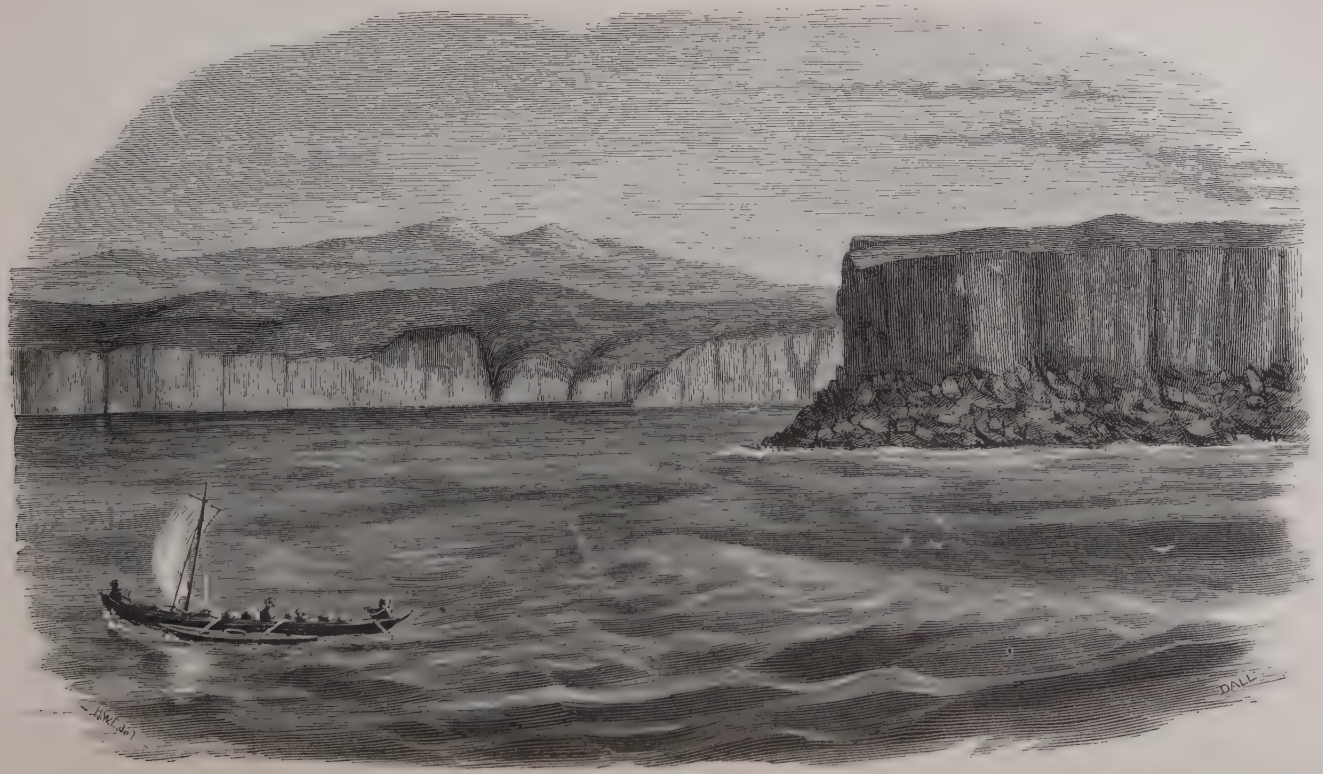
wife stood by him while I measured out the drill, powder, ball, and tobacco, and, as I gave him the required quantity of each, would exclaim, "It is too little, we must have more!" I was very much provoked, but there was no way in which I could help myself, and I was obliged to satisfy her avarice, and make her a present besides, while wishing her at the bottom of the sea. I then loaded the boat, but she was so dry that the water came in at all the seams, and I was obliged to unload her again. It was evident that I must leave a large part of my load at the village, and send back for it. I was very loath to do this, as the Kegiktówruk men are notorious thieves; but there was no help for it. Having picked out the most valuable part of the cargo, including the flour, sugar, tea, lead, and powder, I placed the rest in charge of the old man to whom the boat belonged. I then loaded up for the third time, after greasing the seams with tallow. This day's experience will give a faint idea of the annoyances sometimes endured, and the patience required, in travelling among these natives.

That afternoon an old acquaintance arrived,—a Máhlemut called Ark-hánnok, and his family. His bidarrá was so full that he could not take any goods for me, but he promised to send back his men and boat from Unalaklík, to fetch the goods I left behind. In the evening the absent Káviak returned with two haunches of venison on his back, having killed a deer. We had a good supper off them, and retired early. The next morning I rose at four o'clock and found the wind fair. We boiled the chynik and took a hasty breakfast, getting off about six. Our boat was very low, her gunwale amidships being only four inches above the water. She was so narrow and crank that we were obliged to lash a kyak alongside with two oars, as an outrigger. Even then the Innuit were unwilling to sail from point to point, but insisted on hugging the shore.

The wind was light, and we only reached Golsóva River by noon. We rounded Tolstoi Point with a fair breeze. At Topánika we landed, and found a Máhlemut chief, called Ark-na-pý-ak, camped with his family. Here we drank tea, and took on board a lad about twelve years old, whom we had named Tommy the previous year. He wished to go to Unalaklík, and to oblige the natives I offered him a passage. We started about three

o'clock, with a strong breeze from the southwest, wind coming in puffs with intervals. The water was perfectly smooth, and we sailed finely for some time. The wind grew stronger rapidly, and soon raised a sea which made me anxious. The tide was high, and the perpendicular sandstone bluffs rose direct from the water, the narrow beach being covered. There was no opportunity for landing until the bluffs were passed. The waves began to don their white caps, and occasionally tossed a handful of spray in our faces, as a foretaste of what was coming. I resigned the steering-paddle into the more experienced hands of old New-Years, and stood by him with another, in case that should break. I distributed tin cups to all hands, as I knew we should have to use them very soon in bailing.

The end of the bluffs was passed, but to my dismay I saw the long low beach piled with driftwood, forming an impenetrable *chevaux-de-frise* at high-water mark. Against it the waves were dashing. There was no choice but to go on. It was rapidly growing dark, but the mouth of the river was discernible. We managed, by constant bailing, to keep her free, though every tenth wave would throw in a dozen bucketfuls. The worst was yet to come. I knew that the sea would be breaking on the bar at the mouth of the Unalaklík River, where there is seldom over five feet of water. The only question was, could we pass through that line of breakers in safety? I hardly dared to hope we could. We already heard them roaring on the bar, and could see their white caps dimly. We were all so thoroughly drenched that we could be no wetter. The old Máhlemut never flinched. With his eye on the breakers, as we drew nearer and nearer, he sat silent and rigid as a carved image. The younger men crouched in the bottom of the boat. The little Eskimo lad looked frightened, but did not stop bailing for a moment. I threw off my hunting-shirt, and made ready for swimming. As we were just upon the breakers I glanced at the steersman. He moved not a muscle of his weather-beaten face. The next moment a crash announced that our outriggers were broken. I threw myself upon the kyak and, with the young Káviak, held it for a moment in place. The crest of the advancing roller struck us on the stern, deluging us with water, and before I had time to realize it another followed it, almost burying us; and for a second I thought



TOPANIKA AND TOLSTOI POINT FROM THE SOUND.

we were going down. She rose again, however, more than half filled; and shaking the water out of his scanty hair, the old man said calmly, "Here is the river, there is the fort." We were in smooth water. The last breaker had carried us over the bar.

All hands bailed for dear life, and as soon as we had freed the boat from a dangerous amount of water we pulled for the shore. Here we found ice, and were obliged to pull half a mile to find a landing-place. The Innuit shouted at the top of their lungs, and we were soon answered. Eskimo of all ages and both sexes came out from their dens, helped to haul up the boat, and unloaded her above high-water mark. I expected to find the flour and sugar, which were in bags, entirely spoiled. Pópoff, the Unalaklík bidárshik, finally awoke, and opened the gates. With the help of the natives, I carried the goods into the storehouse, dismissed the men, who took refuge with their friends in the village, and, quite exhausted, followed Pópoff into the casarmer. Here I stripped off my clothes. I had literally not a dry stitch on me, and there was about a gallon of salt water in each boot. Pópoff kindly supplied me with dry clothing, and we sat down around the hospitable samovar. I dare not say how many cups of fragrant tea I disposed of. I know the last was well among the "teens." The bed was only a plank and a blanket, but, with a tobacco-box under my head, I lost myself in a well-earned slumber.

The next day, thanks to the tea, I arose as fresh as ever, though not until nearly noon. My first act was to overhaul the goods. The tea I had taken the precaution to solder up in an empty tin before leaving the Redoubt. The powder was in tight cans. The lead of course was not injured by wetting. The flour, to my surprise, was but slightly wet. Water does not easily penetrate flour in the bags. Our clothes, except what were in tight seal-skin bags, and our blankets, were soaked. The sugar had suffered most. About half of it was well salted. This was a serious loss, but might be partly made good. Altogether we got off much better than I had dared to anticipate.

Pópoff, another Russian named Óstrofskoi, two native workmen, and a Creole woman comprised the entire garrison at the fort. Pópoff was a much pleasanter fellow than most of the Russians, and I got along with him very well. The village contained very few natives, most of them being still absent hunting

deer. The next day I secured Ark-hánnok's bidarrá, and despatched it with a crew of five to fetch the remaining goods from Kegiktówruk. On the night of October 1st they returned, to my surprise, with their load. The rascals at Kegiktówruk had stolen some thirty pounds of backfat and a hatchet. The remainder of the goods were safe.

The weather continued warm and rainy. A few days cleared the ice completely out of the river. I therefore made immediate arrangements for taking the heavy goods by water to Ulúkuk, thus saving time, and transportation over a very bad portage in winter.

On the 3d of October I took three men and the Kegiktówruk bidarrá, and started up the Unalaklík River. We found the current very strong and the water low. We drew, loaded, a foot and a half, finding occasional difficulty in crossing the sandbars.

Ingalik grave.

Ulúkuk, in a straight line, is only thirty-three miles from Unalaklík. By the river, which is more winding than the ancient Meander, it is at least double the distance, and probably more. On the morning of the 4th we reached Iktígalik. Here we found many of the Ingaliks. They wanted to go up in my boat to Ulúkuk, and attempted to detain me by all sorts of contradictory stories about the river. I had had some experience in estimating the value of such talk, and pushed on. Every night new ice formed in the river, and I used all my energy in travelling, in order that we might not be caught and frozen in. On the morning of the 6th we arrived at Ulúkuk. As we drew near we heard a low wailing chant, and Mikála, one of my men, informed me that it was women lamenting for the dead. On landing I saw several Indians hewing out the box in which the dead are placed.

On inquiry I found that our old acquaintance of the previous year, "Kaltág Stareek," had gone to his long home. He had been for many years the "oldest inhabitant," and was much respected by the Russians. The body lay on its side in a deerskin. The heels were lashed to the small of the back, and the head bent forward on the chest, so that his coffin needed to be only about four feet long.

We lost no time in putting the goods into an empty cache, covering them with walrus hide, and nailing up the door. During a long experience I have never known of goods being meddled with or broken open if properly secured, no matter how lonely the situation of the cache, or how long it remained unvisited. "A cache is sacred" is one of the axioms of the wilderness. This goes far to prove that the average of honesty among these Indians is higher than that which obtains among white men. The Innuit, as at Kegiktówruk, are occasionally less trustworthy.

The Ingaliks had just returned from a bear hunt. Bears are not uncommon in this part of the territory. There are three species: The large brown bear of the mountains, known as the "grizzly" among the Hudson Bay voyageurs; the barren-ground bear (*Ursus Richardsonii* of Mayne Reid), which is confined in Russian America to the extreme northeast; and the black bear, which frequents the vicinity of the Yukon, in the wooded district only. The polar or white bear is found only in the vicinity of Bering Strait, on the shores of the Arctic Ocean, and on St. Matthew's Island in Bering Sea. It has probably reached the latter locality on floating ice; we only know of its existence there from whalers, who apply the name of Bear Island to the locality, from the abundance of these animals. We know that it is not found on the mainland south of latitude 65°. The cubs of the black bear are of the same color as the parent, and the adult is very much smaller than its brown cousin, which sometimes reaches a length of nine feet, with a girth nearly as great. The brown bear, or grizzly, is the only one which manifests any ferocity, and it always avoids any contest unless brought to bay.

The manner of hunting it is as follows. After discovering its lair the natives carefully measure the opening. Timbers of the requisite length, and from four to six inches in diameter, are carefully cut, and carried to the vicinity. During the day, when the

bear is known to have returned to the cave, the Indians collect in large numbers, and approach with the utmost quietness, each carrying a timber or a large stone. The timbers are then fitted into the mouth of the den, forming a barricade, and stones in large numbers are piled up against them, only leaving an opening about a foot square. Burning brands are then thrown in to arouse the animal, who puts his head out of the opening, which is too small for egress. A volley of balls soon puts an end to his existence. After satisfying themselves of his death, the hunters remove the barricade, and divide the body among themselves. The skin is valuable only as a rug or bed, or to hang in the doorway of a lodge to exclude the cold.

The Indians were anxious that I should pass the night at Ulúkuk; but, fearful of being frozen in, I decided to return without delay. Coming up, while examining the rocks I discovered a fossil elephant tusk about eight feet long on one of the bars in the river. I put it up on end in order to see it and take it with me on my return. A snow-storm came on, which obscured everything, so that we passed down without seeing it, and arrived at Iktígalik about seven in the evening. The next morning we left Iktígalik about nine o'clock, and half-way down came upon the three-holed bidárka which Kurílla and his companions had left on the shore when they struck across the summer portage. I thought it might prove useful, and took it aboard. About two o'clock we arrived at Unalaklík, just in time to enjoy a steam bath. While I had been absent some Eskimo from Kotzebue Sound had arrived, bringing alcohol, purchased from the traders.

The whole village was in a turmoil, and the Russians at the fort in no little alarm, anticipating an attack. Some natives having reported a remarkable and unknown object as cast upon the beach, Pópoff and myself walked four or five miles to examine it. It proved to be the carcass of a walrus deprived of its head. These animals, as well as whales, are unknown in Norton Sound, and this carcass had probably been driven by the wind and sea from the north.

On the 9th of October I had the bidárka repaired and well oiled. The next day, with Tommy, Johnny and a Káviak, I started for Topánika, to examine the geological character of the

shore. At night we arrived at a creek where an old Máhlemut chief, Allu-iokán, and his people were camped. Here I purchased some deer meat and a large number of tongues.

The next morning the Innuit left us for Unalaklík. Johnny and Tommy started into the interior in search of deer. Taking my haversack, I proceeded to Tolstoi Point, examining the rocks, and taking notes of the character, thickness, and dip of the strata. I found no fossils except indistinct vegetable remains. Climbing the bluff, I followed the edge of a deep ravine inland for half a mile. Feeling thirsty, I managed to swing myself down the precipitous sides, by the birches which grew sparingly in rifts of the rock. Here I found a stream of pure cold water, and, bending down to drink, some fine fossils attracted my attention. Securing a bundle of about fifty pounds' weight, I had a piece of hard work packing them on my back out of the ravine. I was obliged to walk in the bed of the stream, as the sides were too abrupt to ascend with my load. I finally arrived at camp, after dark, and pretty tired. No one was there, and I built a large fire, fearing that Johnny might be unable to return in the obscurity over the rough and broken hills. The boys arrived at last, having killed two deer, bringing, however, only the tongues and kidneys. I rated them well for the folly of destroying game which they could not use or bring home. Economy in such matters is incomprehensible to the native mind. They are always ready to destroy life even if they cannot avail themselves of the remains.

The next day, having completed my observations, I availed myself of an invitation to take passage for Unalaklík in a passing Máhlemut bidarrá. I occupied myself for several days in purchasing articles which I had found from experience were necessary or useful in the interior. These were principally Eskimo winter boots, of deerskin with sealskin soles; deerskin mittens, parkies, and breeches, some destined for the ethnological collection, and others for use; boot-soles, to replace old ones when worn out; deer sinew, for sewing skin clothing; fine sealskin line, for lashing sleds, bidarrá-frames, dog-harness, and boot-strings; mahout, or walrus hide cut in long strips, for tracking-line; prepared sealskin, for mending boats; oil, for lamps in winter; úkali, by the thousand, for dog and man feed; the white

bellies of the deer, with dried fish skins and wolverine skins, for trimming skin clothes; and the backfat of the reindeer, to supply the total absence of pork, bacon, and butter.

The reindeer, in summer, is furnished with a broad layer of fat, between the muscle and the skin, along the back from the shoulder to the haunch. This layer comes off in a single piece fifteen inches broad and from half an inch to four inches thick. This is called the "backfat." Other fat in smaller quantity is procured from the vicinity of the kidneys, the omentum, and the intestines. A little is also procured with the marrow, by pounding and boiling the bones. All this in its dried state is liable to spoil. Anticipating this, I had all my fat cut, pounded up, and tried out. When thoroughly extracted, I poured the pure fat into empty tin cans, thus preserving it from injury and rendering it compact for transportation. The Hudson Bay pemmican is made by pounding dry meat between stones, until all the meat is reduced to powder. The sinews and gristle are picked out, and the rest is mixed with boiling fat and poured into a rawhide bag, where it becomes perfectly solid. Pemmican is unknown to the Russians, whose chief dependence is fish. Indeed, I do not know of any part of Russian America where meat and fat abound in sufficient quantities to be much used in this way. Pemmican is tasteless, unappetizing food, but contains much nourishment in a very compact form.

I have hitherto deferred any minute account of the Innuit of Norton Sound, preferring to give my own impression of them unaffected by that of other observers. During the time spent at Unalaklík I became moderately proficient in their language, and studied their mode of life with great care.

The Innuit, as they call themselves, belong to the same family as the Northern and Western Eskimo. I have frequently used the term Eskimo in referring to them, but they are in many respects very different people from the typical tribes called by that name in the works of Parry, Ross, Simpson, Kane, and other arctic explorers. Comparative vocabularies and an analysis of the different branches of the family will be found elsewhere in this volume. The present remarks refer more particularly to their mode of life.

It should be thoroughly and definitely understood, in the first

place, that they are not Indians; nor have they any known relation, physically, philologically, or otherwise, to the Indian tribes of North America. Their grammar, appearance, habits, and even their anatomy, especially in the form of the skull, separate them widely from the Indian race. On the other hand, it is almost equally questionable whether they are even distinctly related to the Chúkchees and other probably Mongolian races, of the eastern part of Siberia. This is discussed elsewhere.

The Innuit of Norton Sound and the vicinity are of three tribes, each of which, while migrating at certain seasons, has its own peculiar territory. The peninsula between Kotzebue and Norton Sounds is inhabited by the *Káviaks* or *Kaviágemut* Innuit. The neck of this peninsula is occupied by the *Máhlemut* Innuit. The shore of Norton Sound south of Cape Denbigh to Pastólik is the country of the *Únalets* or *Unalígmut* Innuit. The habits of these tribes are essentially similar. They are in every respect superior to any tribe of Indians with which I am acquainted.

Their complexion I have described as brunette. The effect of the sun and wind, especially in summer, is to darken their hue, and from observing those who lived in the fort, I am inclined to think that a regular course of bathing would do much toward whitening them. They are sometimes very tall; I have often seen both men and women nearly six feet in height, and have known several instances where men were taller. Their average height equals that of most civilized races. Their strength is often very great. I have seen a Máhlemut take a hundred-pound sack of flour under each arm, and another in his teeth, and walk with them from the storehouse to the boat, a distance of some twenty rods, without inconvenience. They are fond of exercise, and practise many athletic games, such as football or a similar game, tossing in a blanket or rather walrus hide, running races, hurling stones or lances, lifting weights, and wrestling. Their boats — the kyak or bidárka, and oomiak or bidarrá — have been already described. It may be mentioned in this connection that the oomiak is not considered among the Norton Sound Innuit as a "women's boat," nor is there ever any hesitation about men's using them. In this they differ from the Eskimo as described by arctic explorers. It is noticeable that the more northern the canoe, the smaller it is made. The kyak of Núnivak Island is double the

size of those used in Bering Strait. The kyaks are often ornamented with beluga teeth, or carved pieces of walrus ivory, imitations of birds, walrus, or seal. The prow is also fashioned into the semblance of a bird's or fish's head. Securely seated in his kyak, with a gut shirt strongly tied around the edge of the hole, the Innuit is at home. He will even turn over his kyak and come up on the other side, by skilful use of his paddle.

Aziak or Sledge Island is an abrupt rock rising out of the water, with a landing only at low tide in good weather. I was informed by the captain of a trader, a trustworthy person, that he once approached the island to trade, in rough weather, but could not send a boat ashore, as it was impossible to land. He lay as close as he dared under the lee of the island. Here they saw the Innuit tying several men securely into their kyaks, on the top of the rock, some fifteen or twenty feet above the water. When all was done each man grasped his double-ended paddle, and two others took the kyak by bow and stern and tossed it, with its occupant, into the water. For a moment they disappeared under the waves, but instantly rose and righted themselves; in a few minutes they were alongside, and being taken on board, produced furs and ivory from their kyaks, with which they proceeded to trade for tobacco and other articles. When the tide and wind fell they returned to the island. This is an excellent illustration of the wonderful skill with which they learn to manage these little canoes. In his kyak the Innuit does not hesitate to attack the seal, walrus, or whale. Those of Norton Sound have only the seal and beluga, but those of Bering Strait have abundant opportunities for hunting the bowhead and walrus.

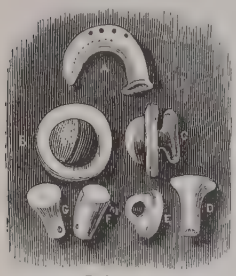
They are good-humored and careless, slow to anger, and usually ready to forgive and forget. They are sometimes revengeful; and murders, generally the result of jealousy, are not very rare. The women are modest, but a want of chastity in an unmarried female is hardly looked upon as a fault. Taking this fact into consideration, they are rather free from immorality. Among the Máhlemuts, cousins, however remote, do not marry, and one wife is the rule. Among the Káviaks, incest is not uncommon, and two or three wives, often sisters, are taken by those who can afford to support them. These people have become demoralized by trading liquor for their furs, and wide-spread immorality is the result.

The same is also true of the Kotzebue Sound Máhlemuts. What we should call immodesty is often undeserving of such a term. Where a practice is universal there is nothing immodest in it, and it may be quite consistent with morality. For instance, the Aleutians, men and women, for ages have been accustomed to bathe together in the sea. They do not think of there being any immodesty in it, yet any immorality is exceedingly rare among them. Hence we should not judge these people too harshly.

There is no ceremony connected with marriage among the Innuit, though presents are often made to the bride's parents. Intermarriage between natives of different tribes is frequent. If ill-behaved or barren, the wife is frequently sent away, and another takes her place. Children are greatly prized, if boys. Girls are at a discount. Infanticide is common among them, both before and after birth. As an excuse, they say that they do not want and cannot support so many daughters. Other women do not like the trouble and care of children, and destroy them for that reason. The usual method is to take the child out, stuff its mouth with grass, and desert it. I have seen several children who had been picked up in this condition, and brought up by others than their parents. The women alone destroy children, but the men seldom punish them for it, and doubtless acquiesce in advance in most cases. Sometimes we find females who refuse to accept husbands, preferring to adopt masculine manners, following the deer on the mountains, trapping and fishing for themselves.

The men treat their wives and children well. The latter are never punished, and seldom need correction, being obedient and good-humored. The men have their own work. Hunting the deer and seal, building and repairing the winter houses, making frames for boats, sleds, and snow-shoes, preparing sealskins for use on boats or for boot-soles, trapping, and bringing home the results of the chase, — in fact, all severe labor, — is performed by the men. Snaring partridges, drying and preparing fish, cutting up the meat when brought into camp, picking berries, dressing deer-skins and making clothing, cooking, and taking care of the children, — these are solely feminine pursuits. Both sexes join in paddling the oomiaks, celebrating their annual dances, bringing and cutting wood, and other work of a like nature. The women are seldom beaten, except for ill-temper or incontinency. They keep

their persons moderately clean, braiding the hair on each side, and twisting beads or strips of wolfskin in with the braids for ornament. They are often of pleasing appearance, sometimes quite pretty. They preserve their beauty much longer than Indian women. Their clear complexion and high color, with their good-humor, make them agreeable companions, and they are often very intelligent. A noticeable feature is their teeth. These are always sound and white, but are almost cylindrical, and in old people are worn down even with the gums, producing a singular appearance. The eyes are not oblique, as in the Mongolian races, but are small, black, and almost even with the face. The nose is flat and disproportionally small. Many of the Innuit have heavy beards and mustaches, while some pull out the former. The men all wear the labrets, but do not tattoo. The women generally have a few lines tattooed on the chin, from the lower lip downward. The inhabitants of the Diomede Islands tattoo extensively; they also wear large labrets made of hypochlorite and finely polished. The tattooing is in spiral lines and waving scrolls, seldom or never representing objects. The Norton Sound Innuit women never wear labrets,* but occasionally pierce the nose and ears. I have never seen any ornament worn in the nose, but ear-rings are not uncommon. The following sketch represents the usual form. They are carved from beluga teeth. Among the *Mágemuts*, a tribe to the south of the Yukon-mouth, the women wear a peculiar labret. It is flat and curved, like a bent nail, with a broad head, which goes inside the mouth, and prevents the labret from slipping through. They are slightly carved, and ornamented with dots and lines. The holes are pierced through the front of the lower lip and close together, not under the corners of the mouth, as among the men. The curved ends stick out like little horns.



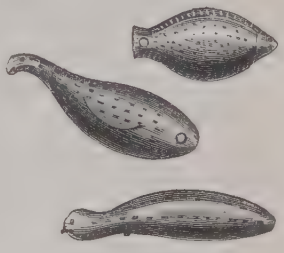
Labrets.

Ear-rings.

In Norton Sound the holes for the labrets are not always pierced

* The figure represents: A, the Magemut female labret; B, C, the Okeeogemut; the rest are Norton Sound labrets of different patterns.

in youth. Whenever the act is performed a feast is given, and the holes are made by means of an awl, with great solemnity. This would indicate that originally the practice had some greater significance than mere ornament. It is now impossible to discover what that significance might have been. At first a mere ivory peg is inserted (F, G) with a hole in which a small wooden peg is put to keep it in place. After the opening has healed, others a little larger are inserted, and so on, until the hole will admit a peg of the full size, and shaped more like a button or stud (D, E). Ornaments carved from beluga teeth are commonly worn. They represent figures of men, animals, or fish. These are some of them, representing a flatfish, goose, and seal. Walrus teeth, obtained by barter, are also used in carving.



Amulets.

The dress of the men has already been described. It reaches to the middle of the thigh, and is cut around nearly or quite straight. The female dress, on the other hand, is continued in two rounded flaps below the knees, before and behind. They are trimmed with strips of white deerskin with the hair cut short, separated by narrow strips of dried fishskin and edged with strips of wolverine or wolf skin, so cut that the long hair makes a fringe. The hood is trimmed with a broad piece of wolfskin, with frequently a strip of the white skin of the arctic hare inside for warmth. The whole effect is very pretty, especially when the parka is made of the tame Siberian reindeer skin, which is mottled with white and delicate shades of brown. The fishskin referred to, when prepared for use, looks like brown marbled paper. It has no scales, and I have not seen the fish from which it is taken.

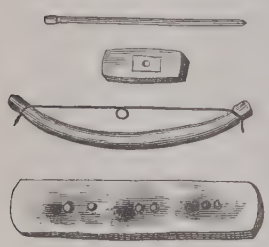
The women wear breeches and boots made in one piece, while the men use deerskin socks, and boots which are not sewed on to the breeches. All use a belt of some kind. The favorite belt among the women is made of the portion of the lower jaw of the reindeer which contains the front teeth. This piece of bone is very small, — I have counted the teeth of one hundred and fifty deer in one belt, — and these belts are not uncommon. They

are sewed on a broad strip of leather, fastened with a large button or bead in front. From the belt hangs the needle-case, usually made of the humerus of a swan, plugged at one end and

Bone needle-case.

having a removable stopper at the other. It is usually ornamented with black lines, as in the above example.

A man's wealth is frequently estimated by parkies. They will buy, with their surplus property, large numbers of parkies. Ten deerskin, or two mink parkies, or one sable parka, are equivalent to a gun. Sealskins, sables, guns, and ammunition are also units of value. They can count up to a hundred, and some of the more intelligent to five hundred. They frequently keep accounts by tying knots in a string or notching a stick. They divide the year by the seasons, and time by lunar months, and days. They can also estimate with much accuracy how much of the day has passed, by the position of the sun or stars. They are very quick at understanding, and can draw very reliable maps, the only difficulty being that far-off distances are exaggerated when compared with those laid down as nearer their homes. They are all provided with flint and steel for lighting fires, but formerly used a different apparatus on the principle of a fiddle-bow drill. This consisted of a mouthpiece of bone or ivory with a small hollow in it, a flat piece of very dry soft wood, a pencil-shaped piece of dry hard wood, and a bow with a slackened string. One end of the pencil fitted into the hollow in the mouthpiece. The latter is held between the teeth. A turn of the bow-string was taken around the pencil; the tablet of soft wood was held in the left hand. The pencil was held firmly against the tablet and the bow rapidly moved back and forth by the right hand. The pencil of course revolved rapidly, the friction created a small pile of dust on the tablet, which was quickly ignited by the heat. A piece of tinder preserved the light, and the fire was obtained.



Innuit fire-drill.

Formerly bows, arrows, and lances were their weapons. In Norton Sound they are now supplanted by guns obtained from the traders. Iron was unknown among these natives two generations ago. All their weapons were of ivory, bone, and slate, except a few native copper implements which came from the Indians of the interior. In early times, the old men say, a knife or a string of beads was worth fifty marten skins. A peculiar kind of knife, shaped like a chopping-knife and called a *pigúlka*, is used in cutting skins. It is made of sheet-iron and has a bone handle. It is preferable to scissors in cutting furs, as it only cuts the skin and not the hair.

To this day the Innuit have no knowledge of working iron by means of heat, although with the aid of a file they will make quite useful knives, saws, and other articles, out of scraps of old sheet or hoop iron. While the ancient Indians made their cutting instruments and tools of stone or native copper, the ancient Innuit substituted, in many cases, bone and ivory. Stone arrowheads, formerly the universal weapons among the Tinneh, are now rarely to be found. On the other hand, the ivory weapons of the Innuit are still in use. The Indian discarded the stone arrowhead entirely, for one of iron; the Innuit retains the ivory head, merely adding to it a tip of iron. The Indian leaves the bow to the children; the more aquatic Innuit finds a gun out of place in his kyak, and still uses the weapon of his ancestors to hunt the seal. Ashore, his weapon is usually a gun. The guns most common among them are very light double-barrelled Belgian fowling-pieces, with an average bore of twenty-eight or thirty. These are obtained from the Kotzebue Sound and Grantley Harbor traders. South of Norton Sound the Innuit are provided with very few guns, and these are mostly long Hudson Bay flintlocks, obtained by trading with the Tinneh tribes of the interior.

Pigulka.

Trading is carried on to a large extent between the Indians and Innuit. The former sell their wooden dishes and other household articles, furs, wolf and wolverine skins, to the latter for oil, sealskins, seal and walrus line, and articles obtained by the Innuit from the traders. The Innuit again trade beaver skins, wooden dishes, and other articles of wood to the Tuski and other

tribes of Bering Strait, in exchange for walrus ivory and skins of the tame Siberian reindeer, which the latter obtain from the Chúkchees. In this way a commerce is constantly carried on between the interior tribes of America and Siberia, by means of the Innuit, who act as middle-men. The bitter enmity and constant hostility which are found between the northern and western Eskimo and the Indians do not exist between the latter and the Innuit of the western and southwestern coast. It is true that both exhibit great jealousy in regard to their boundary lines. These lines are generally formed by the summit of the watershed between the small rivers which empty into the sea and those which fall into the Yukon. They coincide nearly with the line of the wooded district to which the Indians are confined. Any man of either race found on the wrong side of the line is liable to be shot at sight, and deaths occur every season from this cause. Nevertheless, a tacit arrangement exists between adjoining tribes of the two races, so that an Innuit who kills a deer on Indian territory may retain the meat, provided he leaves the skin at the nearest Indian village. The Indians cross the Ulúkuk portage every winter, and trade at Unalaklík with the Innuit. The latter cross the Anvik portage at the same season, and trade with the Yukon Ingaliks. Great caution is used by both while in foreign territory, and nearly every year a panic occurs on the coast or in the interior, from some rumor that the hostile race are preparing for invasion and war.

The Indians call the Innuit and Eskimo *Uskećmi*, or sorcerers. *Kaguskećmi* is the Innuit name for the casines in which their shamáns perform their superstitious rites. From this root comes the word Eskimo. The belief in shamánism is much the same among the Innuit as that which is entertained among the Indians, but the rites of the Innuit shamáns differ in the manner of performance from those of the other race, and very much from those of the Chúkchees and other inland races of Siberia.

A Máhlemut shamán covers his head and the upper part of his body with a kamlayka. He holds a wand, often of ivory, in each hand, and beats on the floor of the casine, keeping time with a monotonous chorus. When the frenzy seizes him he rolls on the floor in violent convulsions. His body and face are concealed beneath the kamlayka, which rustles violently with his motions,

while all watch anxiously for any words which may escape him during the fit. Such are regarded as omens of deep significance, and the hearers are implicitly guided by them.

The totemic system is not found among the Innuit. Each boy, when arrived at the age of puberty, selects an animal, fish, or bird, which he adopts as a patron. The spirit which looks after the animals of that species is supposed to act henceforth as his guardian. Sometimes the animal is selected in early childhood by the parents. If he has long-continued want of success in his pursuits, he will sometimes change his patron. They do not abstain from eating or using the flesh and skin of the animal which they have chosen, as do some tribes of Indians. They always wear a piece of the skin or a bone of that animal, which they regard as an amulet, and use every precaution against its loss, which would be regarded as a grave calamity. When desiring assistance or advice they do not themselves seek it, but employ a shamán to address their patron spirit. These customs do not extend to females. The spirits of the deer, seal, salmon, and beluga, are regarded by all with special veneration; as to these animals they owe their support. Each has its season, and while hunting, it is almost impossible to induce them to attempt any other work, as they seem to think each spirit demands exclusive attention while he extends his favors. The homes of these spirits are supposed to be in the north. The auroras are the reflections from the lights used during supposed dances of the spirits. Singularly enough, they call the constellation of Ursa Major by the name of *Okil-ókpuk*, signifying Great Bear, and consider him to be ever on the watch while the other spirits carry on their festivities. None of the spirits are regarded as supreme, nor have the Innuit any idea of a deity, a state of future reward and punishment, or any system of morality. Many of them have been christened by the Russian missionaries, but none have any idea of Christianity.

The dead are enclosed above ground in a box, in the manner previously described. The annexed sketch shows the form of the sarcophagus, which in this case is ornamented with snow-shoes, a reel for seal lines, a fishing-rod, and a wooden dish or kantág. The latter is found with every grave, and usually one is placed in the box with the body. Sometimes a part of the property of the

dead person is placed in the coffin or about it. Occasionally the whole is thus disposed of. Generally the furs, provisions, and clothing (except such as has been worn) are divided among the nearer relations of the dead, or remain in possession of his family if he has one. Such clothing, household utensils, and weapons as the deceased had in daily use are almost invariably enclosed in his coffin. If there are many deaths about the same time, or an epidemic occurs, everything belonging to the dead is destroyed. The house in which a death occurs is always deserted, and usually destroyed. In order to avoid this, it is not uncommon to take the sick person out of the house and put him in a tent to die.

Innuit grave.

A woman's coffin may be known by the kettles and other feminine utensils about it. There is no distinction between the sexes in method of burial. On the outside of the coffin figures are usually drawn in red ochre. Figures of fur animals indicate that the dead person was a good trapper; of seal or deer, show his proficiency as a hunter; representations of parkies, that he was wealthy: the manner of his death is also occasionally indicated.

For four days after a death the women in the village do no sewing, for five days the men do not cut wood with an axe. The relatives of the dead must not seek birds' eggs on the overhanging cliffs for a year, or their feet will slip from under them, and they will be dashed to pieces. No mourning is worn or indicated, except by cutting the hair. Women sit and watch the body, chanting a mournful refrain, until it is interred. They seldom suspect that others have brought the death about by shamánism, as the Indians almost invariably do. At the end of a year from the death a festival is given, presents are made to those who assisted in making the coffin, and the period of mourning is over. Their grief seldom seems deep, but they indulge for a long time in wailing for the dead at intervals. I have seen several women who refused to take a second husband, and had remained single, in spite of repeated offers, for many years.

Their habits are very regular. Every season the same round is gone through as in the previous one, only varied by the differences in temperature and in the prevalence of fish and game.

In February they leave the villages and repair to the mountains, with all their families. They pursue the deer until the snow begins to melt. I am informed that among the Máhlemuts, near their more inland villages, they will not permit any water to be boiled inside of the houses while the deer hunt continues. This is only one of many similar superstitions. The deer are stalked ; noosed in mahout snares, set where they are accustomed to run ; or driven into pounds built for the purpose, where they are killed by hundreds. Since the introduction of fire-arms, about fifteen years ago, the number of deer has been very greatly diminished. At the same time the bow and arrow have fallen into disuse, and it would be impossible at present for them to obtain sufficient food without guns and ammunition. The Káviak peninsula formerly abounded with deer ; at present none are found there.

When the snow melts and the ice comes out of the small rivers, the Innuit return to their homes. Myriads of water-fowl arrive, and breed on the steep cliffs of Besboro' Island, and similar promontories of the coast. About this time the young men seek for eggs and kill the parent birds, while the older and more wealthy start for Grantley Harbor and Kotzebue Sound, where the traders meet them as soon as open water affords opportunity. As June arrives, eggs are more abundant, and form for a while the chief article of diet. Gulls' eggs are rejected by the women and children, who believe that they will grow old and decrepit if they eat them. Seal may also be obtained in small numbers, and immense schools of herring visit the shores, remaining about ten days and then disappearing for the season.

As July advances the salmon arrive, and every one is found upon the shore. Gill nets are stretched out from the beach, and the sands are red with the fish, split and hung up to dry ; dogs and men have as much as they can eat, and large supplies of úkali are laid in for winter use. While the fishery lasts no wood must be cut with an axe, or the salmon will disappear. Near the end of July a small fleet of bidarrás arrive with those who have been away trading, and a deputation of Tuski or Okee-

ógemuts with walrus ivory, whalebone, and tame reindeer skins for barter.

In August many of the women repair to the hills, where they hunt the young reindeer fawns. The latter are caught by running after them, or in snares. Their skins are valued for clothing, and make a very pretty light parka. They are of a uniform brownish red, lighter on the belly, and not spotted like the young of the red deer. The skins are nearly valueless until about a month old, and it is hardly necessary to contradict Zagóskin's fables about the unborn young. The latter, I believe, are not eaten by the Innuit; at least, I have frequently seen them thrown to the dogs. The stomach of the adult deer, filled with half-digested willow-tips, is regarded as a delicacy, and eaten as we do salad. The supply of backfat is also laid in at this season; later it disappears.

In September many repair to Pastol Bay and Norton Bay, where they kill the beluga, left in shallows by the tide. The seal fishery is at this time in full blast, and the natives will not work on the frames of boats or kyaks. As the cold weather comes on, the rutting season of the deer comes with it, and most of the Innuit repair to the mountains after them. At this season the supplies of deerskins, sinews, and meat are laid in for the winter. About the middle of October the shores of the Sound are girded with ice. The seal disappear, but myriads of a small fish, like tom-cod, are found all along the shores, and are fished for through holes in the ice. The hook is peculiar. It is made of a small oval piece of bone with a sharp pin inserted into it diagonally. It is not baited, as the fish bite at the ivory, which is tied on a whalebone thread, whose elasticity gives the hook a tremulous motion in the water. The sinker is also an oval piece of bone or ivory. These little fish are excellent eating, and are caught by thousands at Unalaklík.

Innuit fish-hook and sinker.

By this time the majority have returned to the villages, and trapping commences. The women are at work on the winter clothing, and the season of festivity sets in.

The greater part of November and half of December is occupied by dances and festivals. About January the trade with the Indians commences, and in February they again repair to the

mountains as before. This gives a sketch of their mode of life during the year. The dances and winter festivities deserve more minute description.

All the Innuit are fond of dancing and singing together. The principal point, in both Innuit and Indian dances, is, to make as many different kinds of motion with the body and arms as possible, always keeping the most exact time with the chorus and with each other. The dances take place in the casine of the village, and time is kept by a number of old men, who lead the chorus and beat time with an elastic wand on a sort of large tambourine. Their festivals may be divided into two classes, — one where they meet simply to dance and sing, and the other when there are also other ends in view. In the former the singers confine themselves strictly to the chorus "Ung hi yah," &c., which has previously been described. These dances are held whenever a sufficient number happen to meet in the casine and desire it, but always in the evening. The other festivals also take place in the evening, and are of different kinds. First, there is the opening festival of the winter, which differs from all the others. Then there are festivals at which the givers desire to indicate their friendship for each other by making presents in a manner which will be afterwards described. A third kind of festival is given a year after the death of a relation. A fourth, when a wealthy man wishes to make himself the reputation of a public benefactor. A fifth, when a man wishes to redress an injury which he has done to another, and a sixth, when the village unites in inviting the inhabitants of another village to partake of their hospitality.

The opening festival of the season is usually held early in November. No women participate, except as spectators. The invariable chorus is begun, and kept up until all the young male inhabitants are collected in the casine. As soon as all are present, dishes of charcoal ground up with oil are brought in; all the young men strip themselves and proceed to paint their faces and bodies. No particular pattern is followed, but each one suits his own fancy. When all are duly adorned they leave the casine in single file, ending with the boys. Attired in Adam's original costume, they visit every house in the village, chanting as they go. Each family has prepared dishes of eatables according to their means. These are given to the performers; and when all the houses have been visited,

— the atmosphere meanwhile perhaps many degrees below zero, — they return laden to the casine. Passing under the floor, each one stands a moment in the central opening, chants for a few seconds while the old men beat the drums, and then springs out and deposits on the floor the dish he carries. When all have come in they form in a hollow square, each one holding a dish in both hands. A peculiar chant is begun by one of the old men, and the others join in with him; they then turn towards the north corner of the building, chanting, and at a given signal all raise the dishes of food which they carry, above their heads in a northerly direction, at the same time looking down and uttering a hissing sound. This is repeated several times; the chant then continues for a few minutes, when they turn to the east and repeat the performance; and again to the south and west. This is to exorcise evil spirits. This being done, all set to and dispose of the eatables. When the feast is over they proceed to wash off the paint, at which stage of the performance most civilized spectators are obliged by the odor to retire. After the washing is concluded all join in the ordinary chorus and disperse to their homes.

The third kind of festival is given by the relatives of the dead, both male and female. They appear by the underground passage, carrying food and presents. Placing them on the floor, they join in the usual chorus. The motions of the females are graceful and easy. The men strive to outdo each other in jumping and extreme exertions of every muscle of the body, always keeping perfect time. Between the meaningless syllables of the chorus, words are interpolated, eulogizing the virtues of the deceased and relating his exploits in hunting and fishing. The men imitate in their actions the motions of approaching the deer, of shooting, pursuing, and of taking off the skin. The same dumb show is carried out until the relation of the history of the dead man is completed. The women then distribute the eatables to the friends of the family. The men distribute the presents. Some trifle, such as a leaf of tobacco or a pair of sealskin boot-soles, is given to every spectator. A handsome gift falls to him who made the coffin, and smaller presents to others who assisted at the interment. After this is over a more lively chant begins, indicating that the season of mourning is over, and that the relatives have performed their duty. With this the exhibition closes.

The fourth festival is not a very common one, and is more practised among the tribes of the Yukon-mouth and to the southward. The man who proposes to give it often saves up his property for years, and retains nothing, being reduced to poverty by the festival. He accumulates deerskins, beaver, sealskins and furs, beads, and other articles of value. He exerts himself to the utmost in preparing food for his guests. When the preparations are complete he sends to all the natives of the vicinity, who crowd to the feast. It begins with dancing and singing, each guest doing his utmost to excel in each and do honor to the occasion. The festival lasts as many days as the provisions will hold out. On the last day the host, dressed in a new suit, welcomes his friends in the casine. To each he gives presents of whatever he may like best; when all the store of gifts is exhausted the host strips himself, replacing the new clothing by the poorest rags, and gives the former to whoever has not previously received a gift. His wife does the same. The guests put on their new clothing on the spot in silence. The host then addresses them, saying that he has nothing left, and depreciating his own generosity as much as possible. He then dismisses the assembly, who go back to their homes. No return is asked or expected, and the host is often reduced to extreme destitution, which he regards as a slight matter compared with the reputation which the festival has given him. At some of these feasts ten guns, two hundred beaver, a hundred sealskins, fifty deerskins, five hundred sable, two hundred fathoms of strung beads, ten wolf or wolverine skins, and as many suits of clothing and blankets, have been given away by one man. Stepánoff told me of a man who saved for fifteen years, until he accumulated such a store of valuables, and then made a feast and gave everything away.

The fifth kind of festival is also of rather rare occurrence. I witnessed but one. The man who had originated the quarrel sent a messenger some seventy miles to the man who had been injured or offended. The messenger was dressed in a new suit, with a red shirt, and carried a wand ornamented with feathers in his hand. Intimation of the intention had of course reached the recipient in advance. The messenger found him at his work. Chanting as he approached, he made known his errand, striking the receiver with his wand; and suddenly seizing a knife, he

grasped him by the neck and brandished it above his head. The other, understanding the intention, made no resistance; and concluding his chant, the messenger inquired what restitution was desired. The other told what he wished for, and the messenger informed him where and when it would be made. The herald then returned to him who sent him, and his errand was done. Several weeks later the feast was given. The required restitution and much more was presented to the offended party, who, as well as the offender, was dressed in an entirely new suit of clothes. After the gifts had been accepted the two stood up and danced together, keeping time with the drums. They then exchanged clothing, as a sign that they were friends again, and the person who received the presents divided tobacco and sealskins among the spectators, which finished the ceremony.

The sixth sort of festival is frequent. Every winter several take place. In December, 1867, the Máhlemuts residing at Unalaklík invited the Máhlemuts of Shaktólik to participate in a festival at the former place. The guests arrived about the middle of the month, and were quartered in the different houses in the village. On the opening of the performances all gathered in the casine. The guests were merely spectators. The principal men of the Unalaklík village, eight in number, appeared by the subterranean passage and formed in line on the floor. Six women, the best dancers in the place, took their places opposite. Alluiánok and one or two old men, whose age forbade their joining in the dance, took the drums and led the chorus. The men were stripped to the waist. They wore breeches of tame reindeer skin, and had each a tail of wolf or wolverine attached to the belt behind. They had on gloves trimmed with wolverine skin, and boots ornamented with strips of fur and marten tails. Around the head each had a fillet of deerskin ornamented with feathers, which came down on the shoulders behind. The women were provided with long shirts made of the intestines of the seal, cleaned, split, and sewed together. These shirts were translucent, embroidered with bits of colored worsted, and ornamented with short pendent strings of beads. Through the semi-transparent dress the motions of the body were perceptible. Their breeches were of the white Siberian reindeer, embroidered, decorated with strips of wolfskin, and made to fit the limbs

perfectly. The upper dress came a little below the knees. Their hair was arranged and braided on each side, with the greatest care. Strips of white wolfskin and strings of beads were incorporated with the braids, and pendants of beads and bead necklaces ornamented the shoulders. Their hands were encased in snow-white gloves, fitting closely and made with great care from the tender skin of the reindeer fawn. These were trimmed around the wrist with a fringe of wolfskin. In each hand they held long eagle feathers, to the edges of which tufts of swan's-down were attached. The opening chant was slow and measured. The motions of the dancers were modest and pleasing; the extreme gracefulness of the women, especially, would have excited admiration anywhere. They kept the most perfect time with the chorus and drum taps. Between the syllables of the former, words of welcome to the strangers were interpolated in such a way as not to interfere with the rhythm. The slowly waving feathers and delicate undulations of the dancers rendered the scene extremely attractive.

As the performance went on, the spectators joined in the chorus, which became more animated. Other villagers entered into the dance, and all joined in dumb show to imitate the operations of daily life. New songs, invented for the occasion, descriptive of hunting the deer, bear, and fox, of pursuing the seal in kyaks, of travelling in the oomiaks, of fishing and other pursuits, were introduced in the chorus. The excitement increased, and was added to by the applause of the spectators. All entered freely into the enjoyment of the hour. Children appeared from below, dressed in new and beautifully decorated clothing. With the greatest gravity, and keeping time in all their motions with the song, they deposited on the floor dishes of boiled fish, meat, oil, and reindeer marrow; berries in a cream-like mixture of snow, oil, and fat; and other delicacies. This done, they scampered out, to return again. The dance came to a close, and the feast began. That over, all joined in a lively chorus, tobacco was distributed to the spectators, and the performance closed for the night. The next evening a similar exhibition took place, which was repeated every night for a week. The best dancers took occasion to exhibit their proficiency singly; new and original songs and symbolic pantomimes were introduced

every evening. During the whole of the festival only the most necessary labor was performed, and it would have been quite impossible to induce anybody to do any outside work. When it came to an end the guests departed, to reciprocate another winter at Shaktólik. In this way the hospitable Innuit vary the monotony of their existence, and by constant interchange of hospitalities produce the most friendly feelings between different tribes. Those about the Yukon-mouth seldom take part in these festivities on Norton Sound. The latter embrace the different tribes from Pastólik to Kotzebue Sound and Bering Strait.

The dialects of those to the southward are so different that they would have difficulty in intercourse with the former, which is probably the reason of their absence; but among themselves they carry on an equal amount of such festivities. The semi-religious masked dances and midnight mysteries of the ancient Aleutians find no counterpart among the Innuit of Norton Sound.

It is impossible to doubt that, among all American aborigines, much in their mode of life, customs, and ceremonials is of a local nature, and due to extraneous circumstances. Much is also due, unquestionably, to the similarity of thought and habit which must obtain among human beings of a low type, and who gain their living by similar means. Hence, a general similarity of many customs may naturally be expected between both Innuit and Indians, as well as far-distant aborigines of different parts of the world, and this similarity can afford no basis for generalizations in regard to their origin.

Pópoff and myself determined to join in giving a festival of the second class, which has not yet been described. Myúnuk was chosen as the messenger. He was dressed in a new suit of clothes, which was his perquisite; he wore a fillet of wolfskin around his head and carried a wand in his hand. This was about six feet long, and curiously ornamented and carved, somewhat resembling the Roman palms carried in procession by high dignitaries of the Catholic Church on Palm-Sunday. He received his messages and departed. Pópoff had designated Alluiánok as the one whom he desired to honor. I chose Ark-napýak, another chief; and Ostrofskoi another, called André.

The messenger, first finding where the person indicated is, runs at the top of his speed. On approaching him he shouts, "Oh! oh!" as loudly as possible, and chants a lively chorus. At the same time he delivers his message, waving his wand about the head of the other, and tells him that Pópoff, or whoever it may be, is desirous of giving a festival, and having selected him as a suitable person to honor, desires to know what would be acceptable to him as a present. The other replies that he will accept the honor, and mentions whatever he may want. In this case, Alluiánok asked for tobacco and a new shirt, André for wolverine skin, and Arknapýak for a glass of water, meaning liquor. A day was set for the festival; all who chose to come were welcome. We had a large kettle, containing some ten gallons of rice, cracked wheat, and oil, boiled into a general mush, and flavored with molasses; and another full of tea. Each guest was served with the former, and received with the latter a slice of bread and a lump of sugar. The presents were then given, and the practice is to give as much as possible over and above what was asked for. Being without the liquor which was so much desired, I chose to understand the request literally, and presented Arknapýak with a large bowl full of scarlet beads, much coveted by the Innuit, and filled up with water. Powder, lead, caps, drill, and a little case of portable tools made up his present, and after the others had received theirs, I distributed among the guests small pieces of black tobacco, careful that none should be overlooked. If the festival had been given by natives only, dances and the chorus would have preceded the feast, but the casarmer of the fort was unsuitable for dancing. The assembly then dispersed, and we were notified to attend at the next stage of the proceedings, in the casine of the village.

A day or two after, the messenger came to us to know what we desired in return, using the ceremonial previously described. One of the points which give zest to these festivals is the practice of asking for the thing of all others most difficult to obtain. It is a point of honor with the giver to procure it at any price or risk. In some cases couriers are sent hundreds of miles, and the festival is prolonged until their return, in order that the honor of the host may be untarnished. I asked for a live seal, knowing very well that the seal had left the coast at least three weeks before, and that no amount of trouble would obtain one. Pópoff asked for

foxskins and beaver; Ostrofskoi, for a tame reindeer parka, and wolfskin for collars.

The next day we repaired to the casine in the evening. The custom is for those who bring presents to approach by the underground passage. We sat on the floor around the aperture, and Myúnuk appeared and distributed tobacco to those present, a beaver-skin to Pópoff, and a pair of walrus tusks to me. The giver stands in the aperture and dances and sings there for a few moments, the old men, meanwhile, keeping time on the drums. Alluiánok came up and presented Pópoff with three fine red foxes. The giver always depreciates his present, and says there are no more to be had, after which he stoops down and pulls out something more, repeating the remarks until his supply is exhausted. Arknapýak brought me a fine pair of winter boots ornamented with wolverine skin, a dish of deer fat, two marten skins, a bundle of boot-soles and some berries. André offered fat, berries, a fine kamláyka, wolfskin for collars, half a sealskin for boot-soles, meat, reindeer tongues, sinew, and a fine pair of tame reindeer breeches. Each, after giving all his presents, howled once or twice, danced in the aperture, and finally jumped out to one side. The old men kept up a persevering drumming and chorus. We distributed the tobacco and fat among them and returned to the fort. Arknapýak said that his men had gone to the edge of the ice after seal, and he could not yet fulfil all of his duty, but would do so before the festival was over. It was again the turn of the Innuit, and hoping to find me unprepared, he asked for a plane, which of all things is most difficult to obtain in this part of the world. I was fortunate enough to find one in the tool-box which I bought of Pópoff. It was duly presented at the next meeting, which was similar to the one already described, and in return I asked for a good tame reindeer suit for my ethnological collection. The closing evening of the festival arrived, and after the preliminary dances and singing were concluded, the head of a seal appeared in the opening of the floor, the body followed, and it began to move about, pulled by strings in the hands of bystanders stationed for the purpose. It was dead, but complete and frozen in a natural attitude. As it was jerked about the Innuit imitated the cry of the seal, much to everybody's amusement. Arknapýak then appeared and stated that owing to

the lateness of the season he was unable to procure a more lively seal for the purpose, and hoped that this one would prove satisfactory. He added that it would not bite. His explanation was received with applause, and he added many other acceptable articles to his present. The old men rose, and Alluiánok the senior chief then declared that the festival had been properly carried out and every one satisfied. He thanked us for joining with them in such a cordial manner, and proclaimed that the feast was at an end. It was the first time on Norton Sound that white men had joined with the Innuit in celebrating these games, although Stepánoff had several times done so, when on trading expeditions among the more southern Innuit.

While collecting on the beach west of the river on the 18th of October, I met a native who said that he had come up in my new bidarrá from the Redoubt. The stormy weather had delayed it. The next day it arrived at the fort, in charge of I'chuk Kóliak, a trustworthy Máhlemut, who on many occasions had been extremely useful to our parties. His only fault was a predilection for liquor. He was honest, straightforward, and very intelligent. He had received the name of Isaac from some of the traders, who had also taught him to write his name legibly, but the Innuit had corrupted Isaac into Ichuk.

Ingechuk and Andrea having arrived from Iktígalik, I endeavored to engage them to take the bidarrá up to that place while the Unalaklík River was still unfrozen. They agreed, but put off starting until the next day. When the morning had arrived we provided bread and úkali for them, when I discovered that the brave Ingaliks expected me to hire somebody to row them up the river! After expressing my opinion very freely of their laziness and general worthlessness, I hired three Máhlemuts to take their places. That afternoon I was seized with violent pain in my neck and back, accompanied by fever, probably caused by camping on the river. On examining my boxes I was astounded to find that the small supply of medicine had been left at the Redoubt. I felt that the case admitted of no delay. Although the 20th of October, the air was mild and pleasant. Not a particle of ice was to be seen on the river or along the seashore. I went up to the village, and through Isaac's mediation obtained two men. Putting a little tea, sugar, and two loaves of bread, with

half a dozen salt salmon-trout, into the three-holed bidárka, in half an hour I had started for the Redoubt, a journey as unexpected as it was sudden. Another day, if the weather continued fine, would bring us there. We camped at Fossil Creek near Topánika, but I passed a sleepless and painful night. The next morning we were off again early and plied our paddles vigorously, hoping to reach Pallonoi Point. The waves rose very high, however, showing heavy weather to the westward, and the wind began to freshen. The rollers became so large that we were obliged to put on our kamláykas and tie them round the holes. The bidarka was frequently buried in the water, and as she was very old I was obliged for safety to put in at Kegiktówruk. My situation may be imagined, burning with fever and impatience at the delay. There was no help for it, however. Four days I lay in the casine, suffering from anxiety quite as much as from the pain, which however grew no worse. We got out of provisions the second day, as I had not anticipated such delay. I cut the last loaf into three parts and divided equally with my men. There was nothing else but seal meat obtainable. I tried the heart and liver, which were not objectionable, but the flesh impregnated with the oil was positively revolting. The blubber, when perfectly fresh, has a taste exactly resembling the smell of the old-fashioned lamp oil. Certain arctic explorers have pronounced this, as well as the raw entrails of the seal, to be "delicious!" I can regard this statement only as the result of a depraved appetite goaded by hunger. The blubber of the beluga and whale, and even the flesh of the walrus, sea lion, and fur seal, is eatable. When fresh the taste is but moderately disagreeable and is easily conquered by hunger. But the flesh and oil of the leopard-seal are always extremely repulsive, and cannot to the civilized palate, by any stretch of the imagination, be considered otherwise. Whale-blubber is a luxury compared to it.

I could not force myself to do more than taste it, and the result was immediate nausea. Fortunately, in the evening I obtained a small supply of venison and a deer's tongue. The latter dried or frozen is a great delicacy, and has the flavor of chestnuts. This flavor is lost in great part by cooking. In any shape there is no other kind of tongue which will bear comparison with it.

Towards night of the 24th the waves fell somewhat. About

midnight I stepped out to look at the weather: snow-clouds were driving across the sky, the surf roared, and billows dashed upon the rocky islets. About five o'clock in the morning I rose and took another look. The wind had subsided, but no boats would leave that cove for six months. The weather was icy cold. As far as the eye could reach seaward was a sheet of ice! Aided by the snow, the intense cold in five hours had covered the entire coast of the Sound with ice. It was not clear, smooth, and solid, such as makes in calm weather, but a white, frothy, rough substance, looking like the white slag from an iron-furnace. Close in shore it was several feet thick, but soft and unsafe, with occasional pools of water. The Russians, who often have a substantive name for conditions of things which we describe by means of adjectives, call it *shugáh*, in distinction from clear, solid ice, which is *loht*.

I dismantled the bidárka, raised her on a stage out of reach of the dogs, made up three packs of about fifty pounds each, and about ten o'clock started with my men for the Redoubt on foot. The travelling was exceedingly hard; we had to step from one tussock to another, which often gave way, striking the toes against the frozen ground. I had only one light parka without a hood, and the wind was very cold. By constant exercise I managed to keep warm, and about nightfall caught sight of the hut on the knoll at the Major's Cove. I told the men we would camp here, and they received the information with exclamations of thankfulness. The house was a wretched one, much out of repair, and in consequence smoky. My bread was exhausted; we had fortunately one drawing of tea, but no sugar, and only a small fragment of frozen deer meat. One of my men opened his pack and commenced unrolling a small bundle. First a piece of paper, next a bit of sealskin, and so on, until about ten wrappers had been removed. To my surprise it was the bread I had given him several days before. I praised his economy, but he interrupted me, saying, "Take it; you want it more than I do," and insisted upon my accepting it. The other, who was almost a boy, seeing the bruised and battered condition of my feet, brought out some pieces of cotton drill, which he asked me to use as "nips" and to return to him at some future time. These instances of kind-heartedness are worthy of being remembered. They give a glimpse of characteristics we never found among the Indians, and which eminently

distinguish the Innuit. Several similar instances were related by members of Major Kennicott's party. Máhlemuts in their employ, during a scarcity of provisions, denied themselves in order that others might not suffer.

The next day we boiled our tea-leaves over again, and made the best of our way over the ice along shore. The mouth of the Canal was frozen, as I had hoped, and with care we crossed safely, and reached the Redoubt just as the service was over and the inhabitants were coming out of church. Stepánoff, who with astonishment had watched us crossing the new ice, received me hospitably. I obtained the necessary medicines, and, by heroic doses of calomel and quinine, succeeded in quelling the disorder.

Four days after, though quite weak and still far from well, I started on my return with a Russian Creole, named Goldsen, a sled with six dogs, and three natives. I had obtained some sugar from Stepánoff, to make up my loss, and a good parka, with other necessary articles. The weather was about twelve below zero, and rather windy. We kept on the ice beyond the Major's Cove, but as it was untrustworthy we were obliged to take to the bank. Here the going was very bad, as previously mentioned. There was no snow, and we stumbled over the frozen hillocks until our feet ached again. We arrived safely at Kegiktówruk in the evening. Here we took on the tent and other things which I had been obliged to leave behind.

The next day the travelling was even worse. In many places we had to cut our way through low but heavy willow brush, which grows along small watercourses. We camped in a ravine near the two islands. In the evening the wind fairly howled, and it began to snow. The air was full of fine snow, which the strong wind drove into the eyes. Travelling under such conditions is almost impossible and very dangerous. The Russians call this *poórga*. It is in such storms that travellers lose their way, and are frozen to death. Clear cold, however great, can always be borne, with proper clothing and exercise, but the poorga, penetrating to the bone, first blinds, then chills, and finally exhausts the hapless traveller, who no sooner falls than he is covered by the snowdrift.

The next morning was more pleasant. We passed Golsóva River about eleven. In the middle of the afternoon we saw a

herd of deer feeding among the willow brush. The dogs started off on a full gallop, sleds and all, and it was with the greatest difficulty that we checked them. I started in one direction, and Goldsen in another. A doe with her fawn passed near me. I fired, and she sprang into the air and came down full on her horns. A few struggles, and she was dead. The others, alarmed by the shot, were off at full speed. On examination I found that one of the buckshot with which the gun was loaded had struck her on the leg. Falling on her horns, she had come down with such force as to break open the skull and pierce the brain. This, and not the shot, had killed her. On skinning her we found the udder full of milk, which we saved in a tin cup. It was thick and rich, like cream. The winter coat of the reindeer is gray, with long white hair on the throat. It is a very awkward-looking animal when in motion, reminding one of a cow. The eye is large and black. We cached the meat and skin, taking only the heart and liver. We hung up a handkerchief on a snow-shoe, and poured powder in a wide circle around it to keep off the foxes. Pushing on, we crossed Tolstoi Point, and camped in the house at Topánika. To reach it we were obliged to unload the sled, and carry every article, as well as the dogs, through the water around two points of rock. The ice was rotten, and there was a strip of open water ten yards wide between it and the shore. That night we had milk in our tea, the only time during my stay in Russian America. The house at Topánika, though well built, is very smoky, so much so that in good weather it is better to camp out of doors.

The next day we started for Unalaklík about eight o'clock. We had broken all the bone off the runners, and the sled moved slowly. I pushed on ahead, and reached Unalaklík about two o'clock ; the dogs arrived about two hours afterward.

The annual rumor of a proposed invasion by the Shágeluk Ingaliks had reached Unalaklík during my absence, and after two days' excitement had been forgotten.

November 3d, Isaac's brother arrived from Kotzebue Sound with two kegs of rum, bought from the traders. The whole village was in an uproar very soon, and the Russians barred the doors and loaded their guns, shaking in their shoes with fear. Poor Isaac came up to the fort, without a weapon of any kind,

and the Russians seized him, tied him with ropes, and beat him dreadfully with dog-whips. I remonstrated, but they paid no attention to it, and when weary of abusing him they turned him out of the fort, half naked, and blind with the treatment he had received. As soon as it became known in the village the women united in bewailing the misfortune, and the wind brought their cries distinctly to our ears. Isaac's wife came up to the window of the bidárshik's room and cried, "We will tell the Americans when they come back, and they will not forget us," but she was only answered with curses. More brutality joined to greater cowardice I hope never to witness.

The storm blew over in time, though the hatred which all the natives bore the Russians was much increased. Isaac was very popular among the Innuit, and had never injured the Russians in any way. I took some medicine and went down to the village next day, and dressed his wounds and bruises, but the Russians were afraid to leave the fort for a week.

On the 8th of November an old woman died very suddenly in the village. The warm weather in October had occasioned much sickness everywhere among the natives. Pleurisy and bronchitis were very prevalent; many were sick, and all much alarmed. By the liberal use of mustard I assisted many of them, and my attempts to cure them met with the utmost gratitude from the poor people. The weather was very cold, and a piercing east wind prevailed, which did not help matters.

Near the fort is a small village of Káviaks; their chief, named Kamókin, had been of much assistance to Captain Pim and other explorers in search of Franklin. He was always harping on this subject, and brought it forward on every occasion. A more persevering old beggar I never saw, nor were any of the others so unreliable or so mean. A fierce bulldog given him by the English was a perfect nuisance in the village. One of his workmen was sick with pneumonia, but not dangerously; he was in a fair way to recover when the old woman died. Fearful that this man would die in the house, which must then be deserted, Kamókin, with the greatest barbarity, and deaf to our remonstrances, put him out of doors in a cotton tent, without food, blanket, or fire. Of course, in two days, with the temperature thirty below zero and a sharp wind, the poor fellow died. His body was

dragged a short distance, wrapped in a piece of sealskin, covered with one or two logs, and all his little property, including his gun, scattered about on the ground. Left in this way, the dogs soon attacked it, and it was only by threatening Kamókin that we would take the body and throw it into his house through the smoke-hole, that we finally induced him to give it decent burial.

The cold weather continued, and we expected Kurílla with the dogs every day. Meanwhile I had a number of women set at work making new harness, as the old was worn out, and we should need a double supply. These harnesses are made with two bands over the back, sewed on each side to a broad band which passes around the chest and is prolonged into two traces. Beneath, a belly-band with a button and loop holds it on. A single small sealskin will make a dozen good harnesses. The thicker skins make the best, and they are often ornamented with red flannel and bright buttons.

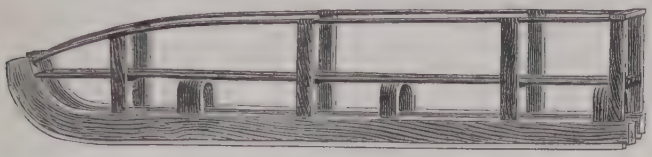
CHAPTER V.

Arrival of Kurilla and the dogs. — Departure from Unalaklik. — Various kinds of sledges. — Arrival at Iktigalik. — Series of detentions. — Indian avarice. — At Ulukuk and across the portage. — Comparative merits of different sledges. — Wolasatux. — Arrival at Nulato. — Sham hysterics. — Fish-traps. — Kurilla's return. — Journey to the Kaiyuh River. — Housekeeping. — Christmas and New-Year's. — Snaring grouse. — Yukon fish. — Continued sickness. — Arrival of the mail. — Start for the Redoubt. — How the Russians travel *vs.* how the Americans travel. — Arrival at the Redoubt. — Return to Iktigalik. — Break-down and repairs. — Dog-driving, and camp life in the Yukon territory. — Snowshoes. — Arrival at Nulato. — Expeditions among the Nulato Hills. — Hostile Koyukuns. — Reasons for their hostility. — Character of the western Tinneh. — Endurance. — Prevalent diseases. — Snow-goggles. — Totems. — Dances and songs. — Arms. — Habits of life. — Additional notes on the Kutchin tribes. — Making shot. — Attack on Tekunka and the result. — Arrival of swallows and geese. — Break-up of the ice. — Narrow escape. — Non-arrival of Indians. — Pavloff's departure.

EARLY in the forenoon of November 12th I was called out by a cry that dogs were coming. On reaching the river-bank I saw the tall form of the indefatigable Kurílla behind a rapidly advancing sled. He had hardly reached the fort when Pávloff, Paspílkoff, Peetka, and Iván the tyone came in sight with two other sleds. All was as usual at Nuláto, and there was a fair prospect of abundance of fish in the coming winter. We greeted them heartily, and were soon seated around the steaming samovár. They were eight days from Nuláto, and had found the ice on the Yukon in good condition, though there were still open places in it. The Russians were bound for the Redoubt, and Iván had come to Unalaklík to buy oil.

The 14th was stormy, and on the 15th I arranged to start for Ulúkuk. I was short of dogs, as Stepánoff had taken all the dogs belonging to the Telegraph Company, except those which Kurílla had brought from Nuláto. I was able to secure nine from the Unalaklík village, and hired three Máhlemuts to assist us as far as Ulúkuk and perhaps to Nuláto. I obtained two Innuit sleds, which would be available only as far as Ulúkuk. These sleds are

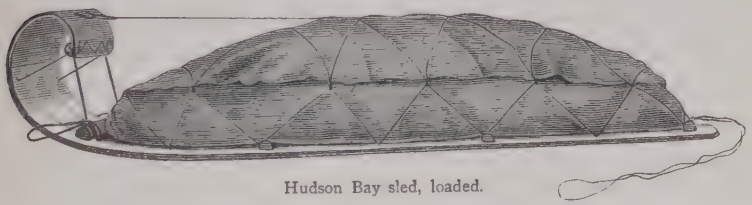
admirably suited for travelling over the ice, but are too heavy to use on a portage. They are made of spruce wood, with the runners shod with bone cut from the upper edge of the jawbone of the whale, and pegged on with birch pegs. They are brought from Bering Strait, and good ones are worth ten sables a pair. The sled is furnished with a flat bottom made of slats, on which the



Innuit sled of Norton Sound.

load is laid, and with a low horizontal rail. We were accustomed to lash a pole on each side, projecting behind the sled at an angle of fifty degrees with the runner. These poles, strengthened with a cross-bar, assisted materially in pushing and guiding the sled and in lifting it up and down steep banks.

We had brought down from Fort Yukon to Nuláto, the previous summer, two Hudson Bay sledges and a set of harness. They are

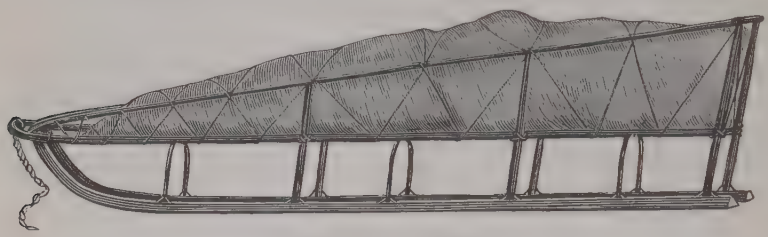


Hudson Bay sled, loaded.

made of three birch boards about twelve feet long. These are cut thin at one end, about three feet of which is bent over, lashed and covered with rawhide to keep it in place. Inside of this curve the voyageur carries his kettle. The boards are secured to each other by crosspieces well lashed on. The load is placed inside of a large bag as long as the sled, and made of dressed mooseskin. It is then covered over and firmly lashed by means of a rawhide line and netting attached to each side of the sled. A piece of mahout, known as the tail-line, passes through a loop in the head of the sled and is tied to the lashings over the load, binding it all firmly together. The preceding sketch shows the appearance of the loaded

sled. The harness is furnished with a padded collar, like a horse-collar, but rounded, which goes over the neck of the dog, and the traces are long. The dogs are harnessed tandem, and three good ones make a team. The traces are buckled on each side of the dog behind, so that the strain all comes on the load and no power is wasted. I found it advantageous to lash two poles to the load behind, as already described, as it is very hard work controlling the motions of the sled by means of the tail-line alone.

The Indian sled of the country is much lighter. It is made of birch, with thin, broad runners, which bend with the inequalities of the road. The accompanying picture will give a better idea



Ingalik sled of the Yukon.

of it than a description. There are no nails or pins, the whole being lashed together by means of rawhide thongs. The load is usually covered with cotton cloth, and firmly lashed to the sides and rail of the sled. The dogs are harnessed two and two, with a leader, to a single line in front of the sled. The traces are tied together, and attached by a short cord to the sled-line. The harness was described in the last chapter.

We had had many discussions during the past season, in regard to the respective merits of the different kinds of sleds, and I was very glad of the opportunity of thus putting them to a practical test. The Hudson Bay sled is the only one used by their voyageurs; while the Russians use a sled similar to the Indian one, but broader and more strongly made.

We started for Ulúkuk about noon of the 15th. Our loads were unusually heavy and the teams small. On each of the Hudson Bay sleds I placed about four hundred pounds, and gave them three good dogs apiece. The Indian sled took about the same load with four dogs, and the Innuit one had about seven hundred with five dogs. The latter, being shod with bone, will carry a

very heavy load over smooth ice with ease. I took one of the Hudson Bay sleds, as I always made it a rule to take as heavy a sled as any man in the brigade. With this arrangement no man could complain of the excessive weight of his load, and laziness was left without an excuse. A light sled should always lead, and break the road. This was Kurílla's post; I brought up the rear, to prevent the natives from needlessly lagging behind. When sure of my men and with a good road, I always took the lead. It is a good plan for the leader to carry the blankets, chynik, and axes; for if a storm should come up, and the others should drop behind, they cannot camp until the day's work is finished, and they have caught up their lost ground.

We found the going moderately good, and camped a short distance below Iktígalik about six o'clock. The days were beginning to be short. The sun rose about ten o'clock, and by three in the afternoon had again reached the horizon. His highest elevation was far below the zenith.

We reached Iktígalik early the next day. Here we camped, bought dog-feed, and rearranged the loads, substituting an Indian sled for the Innuit one, which was of no further use, as we were about to make portages. Matfáy had promised me a new sled and the use of his dogs, for which I had paid him in advance. Now, the old ruffian refused to let his dogs go at all, and gave us a weak and almost worthless old sled. Amílka and others had built some new winter houses near Nuk'kóh, and had deserted Ulúkuk entirely, only one house there being still inhabited. All the Ingaliks were going to the Káiyuh River a little later in the season. Here Tékunka had announced that he would hold a festival. He was now on his way to Unalaklík to purchase oil. We were delayed the next day, having to patch up the old sled, but got off about ten o'clock. We had not proceeded far before three of the knees on one side broke. After making the best repairs in our power we pushed on, and about noon reached the new village.

Here we found a large number of Indians. There was a new sled there, and the owner asked for it a can (1 lb.) of powder, ten balls, and ten percussion-caps. The usual cost of a sled is twenty balls; yet I would have purchased it, even at the outrageous price he named; but after paying him he stooped down and be-

gan to strip off the lashings, saying that the remni belonged to another man. At this my temper, which had been at the boiling-point ever since I left Matfáy, gave way, and I expressed my decided opinion of him as thoroughly as my vocabulary permitted me. Leaving the sled and reclaiming the price, I pushed on, determined not to submit to such an imposition. About a mile beyond the village the old sled gave out entirely. This was the last drop. I said nothing, but took out my pipe and sat down to calm my nerves. The others did the same, and finally Kurílla spoke up and said that we must go back and buy the sled previously spoken of. He suggested that he had a small tin which held only half a pound of powder, and if that were presented to the man he might not detect the difference: in this way we might get even with him. We had plenty of mahout to lash the sled again. I told him he might try, and he went off and soon returned with the sled. We had meanwhile boiled the chynik, and now took our tea, after which we reloaded. One of our dogs had taken the opportunity to gnaw off his harness and disappear in the woods. Meanwhile it had become almost dark, and the men were grumbling, and wanted to go back and spend the night at the village. They invented stories about there being no ice in the Ulúkuk River, and went grudgingly to their work when I told them that stopping was out of the question, and we should sleep only on our arrival at Ulúkuk. This day's adventures are fair specimens of the annoyances sometimes experienced in travelling, and which only patience and energy can overcome. The dogs are given to running away when most wanted, and light steel collars, and chains such as horses are hitched with, would be a very valuable addition to any traveller's equipment.

We arrived in good order, but some time after dark, and camped in one of the winter houses. There we found a few Indians, and obtained abundance of trout, fresh from the river, with which we fed ourselves and the dogs, reserving the lighter úkali for the road. A small Indian cur occasioned great confusion during the night, howling and fighting, and started at last for the woods, with several of our dogs in pursuit. I had reckoned that old Amílka would be willing to lend us his fine team, but he refused; — such is life among the Indians!

The next day was occupied in repairing damages, reloading, and recovering our runaway dogs. The weather was disagreeably windy, with snow.

On the 19th we started very early. A few miles from Ulúkuk we were astonished to see dogs coming, and in a few moments the previously mentioned cur appeared, with Amílka's three dogs in hot pursuit. These were immediately impounded and pressed into the service, forming an exceedingly acceptable addition to our insufficient teams. Even the cur was made to contribute, by tying her to the foremost sled as leader.

In crossing one of the gullies by which the tundra is intersected, the new sled was broken beyond repair. The Indians were in despair; but, by cutting off about three feet of the other runner, I made a short sled, in which two dogs could haul our blankets and other light but bulky articles. The remainder of the load and team was distributed among the other sleds. Owing to this delay we were obliged to camp near the Vesólia Sópka. These repeated stoppages were the more annoying as our dog-feed was short.

The next day we made better time, and camped near Beaver Lake. Many deer tracks were visible, and there were evidently herds in the vicinity.

The following morning we passed Beaver Lake and One-Tree Camp. The wind and snow were blowing just as they were the year before, when I was travelling with Mike. I little thought at that time that my next journey on that road would be taken alone. Facing the keen wind, I got my nose and cheeks somewhat frostbitten, but soon restored them by rubbing with snow. It has been said that freezing is unaccompanied by pain, but my experience does not confirm it. The feeling is as if a thousand red-hot needles were being driven into the flesh. Of course, after it is frozen beneath the skin, there is no further pain. Immediate application of snow will relieve it, and the usual effects are slight. The skin peels off and leaves a brown stain resembling sunburn, and quite as ephemeral. Fire and warmth should be avoided, as they produce an intense burning pain attended with inflammation. The best plan in cold weather is to face the wind boldly; after a while the skin will become inured to it. Arriving at Periválli, we camped, making our supper of úkali and tea.

The next morning we started with the twilight. The valley through which we had been passing is of an hour-glass shape. The narrowest part is near a round, abrupt hill, called by the Russians the Ass's Head. It widens toward Iván's barrábora and Kaltág. We camped not far from the latter place. For the last three days we had been on snowshoes, and the road was far from good.

In the following morning early we reached the Yukon, and crossed to the village on the left bank. Here I bought some dog-feed and a couple of rabbits. There were many fresh marten and fox skins on the caches, and most of the men were away trapping. At this season the fur is the best; toward spring it becomes faded by the sunlight. The next day we continued on our way, reaching Wolasátux' barrábora in the afternoon. Dog-feed was very scarce, and I was obliged to give them only half a fish apiece, instead of a whole one, which is the usual ration. I found myself very tired, having worked with a Hudson Bay sled all day, and with a very heavy load. I came to a conclusion about the sleds, which I have not yet seen any reason to change.

The virtues of the Hudson Bay style are, that it will carry very heavy loads without breaking; that it will make fair time on level, hard snow; that the method of harnessing is good; and with first-class dogs it will do good service. Its faults are, that it will not carry as large a load of light baggage, dog-feed, &c., as the Russian style; that it is much harder to guide; that it is extremely hard work to take it up hill; that on a side-hill it keeps sliding down, unless a level road is beaten for it; finally, that it is almost immovable in soft snow, a large pile of snow always forming under the head of the sled.

For the Russian style it may be said, that, while more liable to fracture, it is much lighter; it will carry an equally heavy load, with the same dogs, as the other style, and the load is above the surface, and not so liable to injury from water or snow; it rides much more easily on a hillside and in soft snow, and the driver can help the dogs much more effectually. The Hudson Bay style is the best for carrying such loads as oil, fresh meat, flour, and hardware; and the other for all lighter loads. The Hudson Bay harness is decidedly the best, but not suitable for a large team, which would infallibly tangle at every declivity. The Innuit sled

is superior to both on the ice, and far inferior everywhere else. The Hudson Bay dogs are swifter and better trained, but not so enduring or tough as the dogs of the coast.

Wolasátux, poor man, was in great tribulation. His eldest son, a bright-eyed, intelligent boy of twelve, was evidently dying. The child was wasted to a skeleton; his cheeks burned with fever; his stomach alone protruded. The old man and his wife were both laid up with pneumonia, and his breast was covered with scars, where he had applied the actual cautery. I left as much bread as I could spare, and some pieces of backfat for the sick boy, who brought out from its hiding-place the skin of a lemming, which he had prepared for me the previous summer. I made the old man a liberal present, for he was a very generous and kind-hearted old fellow.

About noon the following day we reached Nuláto. Only three Russians were there. The house in which I proposed to winter was unfit for occupancy, being without windows. It had been repaired according to my orders, and I occupied a corner in the bidárshik's house until my own should be ready. Several of my dogs had been taken to feed during the past summer by Indians, who had failed to return them in the fall. I sent a man to Koyúkuk, where a great festival was being held, to procure the missing animals. Fish was very scarce, the traps catching very little, as the water continued high in the river. The next day two dogs arrived, but a third had been killed in a rage by the Indian who had it in charge, as he had hoped to keep it permanently. The dogs and sleds were prepared for another journey to Ulúkuk, to bring up the remaining goods. On the 28th of November the brigade started, in charge of Kurílla, Johnny accompanying him, with two Indians and the Máhlemuts. The Russians got after my alcohol for collecting, and I was obliged to poison it. I set to work making windows, and laying my plans for putting down a fish-trap on my own account. The idea of being dependent on the Russians for fish was repugnant to me, and I knew very well that they were often without fish for their own use.

Several of the Indians at the fort had been attacked by a kind of fit, and one of these occurred in my presence. The Russians consulted me as to some means of cure. The patient fell in a sort of convulsion, struggling violently, appearing unconscious,

tearing the clothing, and breaking everything within reach. There were no symptoms of any disease, and the fits were epidemic, seizing one after another at short intervals. The cases resembled the descriptions of those people who were supposed in ancient times to be bewitched, and also some of those appearances which have accompanied cases of semi-religious mania in Europe in modern times. Suspecting the cause of the symptoms, I recommended the application of a birch twig, well laid on: the result exceeded my anticipations. The patients arose in a rage, and the epidemic was effectually checked. The reason for such behavior was inexplicable, and is one of the mysteries peculiar to the Indian mind. It is probable that in the course of time these fits, at first wilful, became in a measure involuntary.

Having finished the windows, I began to put the house in order, and it soon assumed a habitable appearance. My fever, which I had hoped was thoroughly conquered, returned, and I felt anything but well.

On the 4th of December, Pávloff and his companions returned from the Redoubt. They brought discouraging reports from Kurílla, whom they represented as without dog-feed. They strongly opposed my putting down an independent fish-trap, saying that it would cost me a great deal, that I should catch no fish, and that they could furnish me with all I required; but I determined to persevere in my own plan. These fish-traps are the sole dependence of the Russians and Yukon Indians in winter, for a regular supply of food. They are made in the following manner. Green spruce trees, straight-grained and without knots, are selected. It is often a matter of great difficulty to find them. When obtained they are repeatedly split by means of wedges, until the wood is reduced to strips a quarter of an inch in diameter and twelve feet long. The tough green wood does not break. These strips are for the basket and funnel. Thicker ones are used for making the fences or mats. The former are carefully trimmed until cylindrical. The latter are tied together with osiers until a sheet of network is formed, with the strips crossing each other at right angles, and the meshes about two inches long and one high. These sheets are eight feet high and ten long. The basket is twelve feet long, cylindrical, tapering nearly to a point at one end, and open at the other. The aperture in the

point is about eight inches in diameter, and is closed by a small cover. The cylinder is about two feet in diameter. A large funnel of similar network is made. The mouth of it is eight feet square, and it tapers to a very small aperture, just large enough to admit a fish. The point is inserted into the open end of the cylinder, and the whole is tied together. The network of both is fastened with strong twine of hemp, or the inner bark of the willow. Holes are cut into the ice, uprights driven into the mud at the bottom of the river, and the mats are tied strongly to them. In this way a T-shaped fence is made, extending at right angles to the current out into the stream, to a point where it is about eight feet deep. The funnels, with baskets attached, are fastened to the ears of the cross-stroke of the T, one basket pointing up stream and the other down. They are so arranged that they can be lifted to the surface and out of the water. The ice above them is broken away by means of four-sided chisels made for the purpose. As they are raised every other day it does not form to any great thickness. The baskets are kept in place by sharp poles attached to the point and to the sides of the funnel, and pushed down into the mud. Fish going up or down stream follow the shore until they come to the fence, which guides them to the mouth of the funnel, when they enter the basket, from which they cannot escape. The water passes freely through the network, and keeps them alive for any length of time. As the water falls, the fence is extended, and baskets moved out or new ones put down. It is a work of no little labor to cut through the ice and put down the trap, or *zapór*, as the Russians call it. This trap was original with the Yukon Indians, but is found only below Koyúkuk. The upper Indians and the Hudson Bay people know nothing of it. Yagórsha informed me that the Yakúts had a similar custom. Without it, in winter, starvation would reign on the Lower Yukon. Similar traps are used in summer and raised by means of boats. The slender network, exceedingly frail when dry, is very tough when wet. The fish are shaken out by opening the cover at the point of the basket. I had great difficulty in getting suitable wood, and had to send six or eight miles from Nuláto for it. I cut the willows on the island myself, to be ready for work when Kurílla returned.

Métrikoff, the bidárshik of Nuláto before Pávloff, died suddenly,

leaving two bright, intelligent children. The Russians had retained them on sufferance until the Governor could be heard from in regard to them. Maksútoff's reply was, that the Company would do nothing for them, and they had better be given to the Indians! Their mother was dead, and the recommendation of the hard-hearted Russian was carried into effect. Ingechuk, who was a relation of the mother, came and took them to Ulúkuk. It was hard to see two such boys deprived of all prospect of education and condemned to a worthless life with the Indians, but it was a fair specimen of the character of the Russians in Northwest America.

The weather had set in very cold, and averaged thirty below zero at noon. The wood for the trap, which had been obtained with so much trouble, proved unsatisfactory, and there was no prospect of obtaining more until Kurílla returned. Meanwhile, though sick and miserable, I had not neglected the collections, and had already several hundred birdskins of the species which are winter residents.

Late in the afternoon of December 15th, Kurílla made his appearance with the brigade. They had done everything I desired, had brought all the goods except a bag of oil and some úkali, and the train contained four Máhlemut dogs, beside thirteen of mine. The Innuit had come forward and offered dogs as soon as they heard I was in need of them. I could not have trusted any Russian in the territory to do the work as well and faithfully as Kurílla had done it.

The Russians were out of fish. I had úkali, but none to spare. It was evident that nineteen dogs could not be fed at Nuláto for any length of time, and I determined to go to the Káiyuh River, where Tékunka was giving a festival, and distribute all but one team among the Indians, to be fed and used until I needed them again.

Notwithstanding they had nothing to eat, — as the day was a Prasnik, or holiday, when they were not obliged to work, — the Russians preferred sitting in the house and grumbling, to the trouble of going to the fish-trap.

On the 17th of December the Nowikákat tyone and seven men arrived with a small hand-sled loaded with furs, which they sold to Pávloff. When they were at a little distance, though their num-

ber could be counted, the Russians were seized with one of their cowardly fits, barred the gates, loaded the howitzer, and prepared for an attack from eight men and a boy! On their stating their errand, the commotion subsided and the gates were opened.

I made the tyone a present of some tobacco and ammunition, in consideration of his services during the previous spring. With Indian assurance, he immediately demanded a seine, gun, blanket, and a large supply of ammunition, which of course were produced forthwith.

The next day I harnessed all the dogs into one sled and started for Wolasatux', riding several miles for the first time during my stay in Russian America. We found all sick on our arrival, and very short of provisions. The following morning we proceeded up a small river and across the country, until we arrived at Tékunka's barrábora on the Káiyuh River. Here we found the festival in full blast and the place crowded with Indians, dancing and singing all night, so that we got very little rest.

The country is rolling, sparsely wooded, and full of small lakes and rivers, which contain many fish, especially in summer.

The next morning, as the Indians were still engaged in their festivities and would not attend to anything else, I put on my snowshoes and travelled about fifteen miles eastward, to the ridge of the Káiyuh Mountains. These are low hills, trending in a northeast and southwest direction, and at that season covered with snow. Beyond them the country was rolling, with occasional hills, and sparingly wooded. The rivers, if any, were hidden by the snow. I returned, and reached the house in time to make a good camp outside, as I felt very tired and unwilling to be deprived of sleep for another night. I made my supper on raw, frozen whitefish, scraped up like frozen pudding. This dish is not unpalatable, as the freezing has all the effect of cooking. Several of the Indians made me presents of mink and marten skins.

The next day was devoted to trading. I secured a full sled-load of frozen fish and úkali, keeping six dogs, and hiring Indians to take and feed the rest. I also purchased a quantity of frozen berries, and some mats to cover the floor of the house at Nuláto.

Tékunka promised faithfully to make one of my party down

the river in the spring, and I gave him a gun as part payment to clinch the bargain.

The next day all the Indians dispersed to their homes. We left Tékunka, passing up the river to a place known as Jearny's barrábora. Jearny (meaning fat) was the name of a very stout, greasy Ingalik, who had a house and fish-trap, where I hoped to obtain some more fish. The afternoon was moonlight, the sun

Jearny's barrabora.

setting very early, and after stopping to buy fish we thought best to push on. The fence of the fish-trap at this place extended clear across the river, and was made of bundles of willow brush tied together and placed side by side. There was only one Indian house and two caches. The building over the entrance to the house was large, square, strongly built of heavy logs, and pierced for musketry.

We camped five miles beyond. I had determined to return by another route, which would bring us on the Yukon nearly opposite Nuláto. Here I met with a serious misfortune, losing a fine meerschaum, which had been my constant companion and solace. I was now reduced to a single brierwood, in very poor condition. The next morning, starting with the first light, we followed a very poor, roundabout trail toward the Yukon. I

went on ahead of the dogs, and soon outstripped them. About dark I reached Nuláto, pretty thoroughly tired out, having made nearly forty miles on snowshoes. The train arrived about two hours after.

On leaving Nuláto I had placed all our slender store of crockery on a high shelf, that it might be out of any ordinary danger. What was my regret, on going into the house, to find that the shelf had given way, and the whole was in fragments on the floor! No more could be obtained for love or money, and we were reduced to eating off of tin. Luckily, I had purchased of Ketchum a Hudson Bay cup, saucer, and plate, made of iron lined with porcelain. These were uninjured, and afterward did good service. Another plate was repaired by boring small holes with an awl, and sewing the pieces together with strong waxed thread.

My efforts were soon directed to the work of supplying our household with various necessary utensils. Lamps, small cups, and other articles were manufactured out of old tin cans. Mosquito-netting furnished the material for a sieve, and with Paspílkoff's assistance I made a candle-mould. Seal-oil lamps are very unsatisfactory, requiring constant picking, and making a great deal of smoke. Cotton twine furnished wicks, and I was soon able to make very passable candles from my extra supplies of reindeer fat.

The flour which I obtained from the Russians was a mixture of rye and wheat meal, usually denominated groats. The husks were so coarse and abundant that sifting became necessary. The Russians raised their bread by means of leaven, but as this made sour bread I adopted another plan, which is here described for the benefit of future travellers. A gallon of warm water was mixed with a handful of coarse salt, flour enough to make a batter, and was placed in a wooden vessel on the warm peechka over night. Early in the morning flour enough was stirred in to make it of the proper consistency. At breakfast-time the fire was made, and after breakfast, when the coals were removed from the oven, the bread was kneaded, made into loaves, and put in. An hour usually served to bake it, making a batch of perfectly light, sweet bread, without yeast or leaven. White flour may be treated in the same way, but takes longer to rise. I usually made up about forty pounds of flour at a time, and the bread would last us about

a week. I soon found, by calculation, that we must be very careful with our flour, and was obliged to weigh out the daily allowance, — a pound each, not a very large piece of such damp brown bread. I allowed each three pounds of sugar per month, and a pound of tea for all hands. In this way I managed to make our supply last, although we were often on short commons. Fish, rabbits, and grouse were unusually scarce, and often entirely deficient. No deer visit Nuláto during the winter.

I had saved a small piece of frozen deer meat for Christmas, which found us without other supplies in the storehouse. Christmas morning I bought two white grouse, and sent Johnny out to shoot another, which he fortunately succeeded in doing. With these, some berry pies, and some sweetened short-cake, I made

Yukon grouse-snare.

out a pretty fair dinner, and invited Pávloff and Yagor to eat it with me, each bringing his own cup, plate, and spoon, as my stock did not set the table. It was a lonely Christmas compared with the last, or with any I had ever spent before. It was impossible to help thinking of the dear ones at home, of the Christmas-trees and festivities they were enjoying, and equally impossible to doubt that they were thinking of us as we were of them, though many thousand miles away.

New-Year's day brought cold weather, forty-eight below zero. My hunters were unsuccessful, and our dinner was reduced to fish soup, cranberry pie, bread, and tea. My family consisted of Johnny, two Indian boys, and Kurílla. I sent the boys out setting snares for grouse and rabbits. These were occasionally successful, and eked out our slender bill of fare. The snares are

made of twisted deer sinew in a running loop. This is attached to a pole, balanced, as in the preceding sketch, between two branches, and caught over a horizontal pole by means of a small pin tied to the snare. Brush is piled on each side of the tracks which the grouse run in, so that they have to pass through the opening where the snare is set. A touch loosens the pin, and the heavy end of the pole falls, hanging the partridge or rabbit in the air. Some seasons hundreds are caught in this way. These grouse feed entirely on the willow buds, and the crop will sometimes contain a pint. The flesh is hard, dry, and tasteless; a long experience in eating it has left an unfavorable impression. Our fish-trap was in process of manufacture, but illness prevented me from assisting. I seldom rose from my bed, except to weigh out the daily allowance of bread, and I felt my strength failing fast. In spite of this, I could hardly force myself to eat, and was tormented with constant headache.

Cold days alternated with warm weather, and even occasional rain. Pávloff said he had not known such a season for sixteen years. Such mild weather in January was unprecedented.

January 16th the Indians and some Russians, whom I had hired to help, commenced putting down my fish-trap. Kurílla came home with an ugly wound in the thigh, from falling from the sled upon an ice-chisel. I dressed his wound, but this disablement was a serious misfortune. All the Káiyuh Indians, starved out by the unwonted scarcity of fish, had gone to Ulúkuk, where there is always abundance, to stay until March. Weeks passed by, and not an Indian came near the fort.

The Russians were totally without fish, returning from the examination of fifteen baskets with three poor whitefish. They were living on tea and bread. Their dogs were nearly starving. Iván started up the river on his annual trip to Nowikákat, and hoped to find dog-feed on the road.

Kurílla's wound healed rapidly, and to my great thankfulness he was able to ride on the sled and examine the fish-trap, which had caught six whitefish, — a good omen. The first week or two, before the resin is washed out of the wood, the trap rarely catches anything. On the 24th of January there were twelve fish in the trap. From that time forward we obtained from ten to thirty fish every two days, which drove the wolf from the door, and

enabled me to save my úkali by feeding the dogs partly on fresh fish. The Russian trap still continued almost empty, and if I had not persevered in my plan of putting down an independent trap, I should have been left without fresh provisions and lost my dogs by starvation.

The first fish which are caught in early winter on the Yukon, are the "*losh*" (*Lota maculata*) of the Hudson Bay men. These are known in Lake Erie as the "eel pout," and grow in the northern rivers to a very large size. I have seen them four feet long and weighing sixty pounds. The liver is very large and full of a rich sweet oil, which we found very useful in cooking. The livers themselves are good eating, but very rich. The flesh is hard and tasteless, and is usually given to the dogs. They present an anatomical peculiarity in having from one to four distinct gall bladders. The spawn, which occupies a large part of the abdominal cavity, makes an excellent soup. The next most common kind of fish is a red sucker, which grows also to a large size. The heads make a good soup, but the rest of the body is so full of bones as to be uneatable. The pike (*Esox estor*) is very common in the lakes and small rivers, but rare in the Yukon. A salmon-trout is rarely caught, and a belated salmon occasionally finds its way into the trap as late as January. There are six kinds of whitefish, some large and others small. The sea whitefish, or *Morskoí seegá* of the Russians, is considered the best. There is also found in spring a fish resembling the whitefish, but dark-colored, and with a very long dorsal fin, from which it gets the Indian name of "blanket-fish." In July the salmon begin to ascend the river. There are five kinds. Three of them are good eating, but the others are only fit for dogs. After August they are bruised and in bad condition, being cast in layers a foot deep on the banks of the small rivers. I have seen hundreds of thousands of dead salmon cast up in this way by the stream. Of course, in this condition they are only fit for dog-feed, though the Indians will eat them if other food be scarce. Most of these fish, except the salmon, are common to the rivers of the Hudson Bay territory.

On the 30th of January, Pávloff returned. He had not gone far, for want of dog-feed. His trade consisted of a black bearskin and one lynx; the previous year he had brought back some seven hundred sables.

My collection had thriven pretty well, in spite of sickness. I had a keg of small animals and fish, two boxes of birdskins, and other light specimens.

Still, I was fearful lest my sickness should increase so as to prevent my collecting in the spring. I saw that the Russians and Indians considered me as half dead already, and I resolved to overcome it by force of will, if other means failed. I looked in the glass one day, and saw such a cadaverous reflection there that I turned it to the wall. I had already made preparations for my journey to the sea-coast, and the birch was seasoning from which I intended to have a long sled made, expressly to bring the bidarrá over the portage without taking it apart.

On the 3d of February there was a commotion in the fort. Dog-trains were approaching in the distance. A rumor spread that Stepánoff was coming, and it was amusing to watch the unaccustomed energy with which the Russians hastened to clean out the yard, removing the accumulated dirt of months, and sweeping the path clean from the gateway down to the ice. It was not Stepánoff, however, but a Russian and two Creoles, with two of Stepánoff's fine teams from the Redoubt. On arriving, they proved to be Kámaroff, Lukeen, and Alóshka; they brought a bag of oil for Pávloff, a two-gallon keg of molasses, and a larger keg of salted geese, — a present from Stepánoff for me. I knew at once that they had not come so far merely to bring these things. I asked if any news had arrived from Sitka, and received only an evasive reply. After a little I called Lukeen, who was a jolly little Creole, into my house, and stimulated him until he told me, with many injunctions of secrecy, that the official news had arrived, via Nushergák and the Kuskoquím, of the sale of the territory to the United States, that the Russian American Company was wound up, and all the Russians would return to Sitka or the Amoor River by the vessels in the spring. This was good news, and I lost no time in hoisting the stars and stripes on our flagstaff in front of the fort. The news was soon made public, and all received it with joy. Old men who had been many years in the country, detained by trifling debts to the Company, which they had no means of paying, were extravagant in the expression of their delight in the hope, so long deferred, of seeing Russia once more. The native women, who

could not accompany their husbands if the latter chose to leave the country, were in tears at the prospect of parting; while others, whose husbands had treated them with brutality, did not conceal their pleasure at the hope of getting rid of them.

Kámaroff decided to try his luck in trading at Koyúkuk, and beyond; on his return, Pávloff was to go with him to the Redoubt for orders. I decided to accompany them, thinking, if I did break down on the road, I should be within reach of assistance from them, and I had many misgivings as to my own strength.

Paspílkoff at once set about making my new sled, and we began to prepare sukarée for the road. By dint of extreme argument I succeeded in getting Peetka to accompany me to the Redoubt. I proposed to take Kurílla, and leave Johnny and the rest to take care of the house.

Kámaroff and Lukeen returned with a few furs on the 13th, and everything was prepared for an early start the next day. Our loads consisted principally of the collections. I took a Hudson Bay sled, and the long sled for the boat, with eight dogs. On the 14th we set out. I found myself too weak to walk, and was obliged to ride nearly all day on the sled. We made a very short day's work, as the Russians stopped to get dog-feed from the fish-traps, and camped at Wolasátux' barrábora, where they rummaged all the caches for úkali, the Indians being at Ulúkuk. The next day we camped at Kaltág. The necessity for work and the determination to do it were conquering my weakness. I felt better than for months previously.

The next day we reached the hill at Beaver Lake. This was an excellent day's work, and I so remarked to Kámaroff. "Yes, Gospodin Doctor," he replied, with an amusing air of superiority, "this is the way the Russians travel." I made no answer, but did not forget the remark.

The next day we took tea at noon near Iván's barrábora. The Russian sleds were light, and they had full teams of fine dogs. With our heavy sleds we were soon left behind. I forced myself to walk on snowshoes behind the sled, and relieved the dogs as much as possible. We passed Poplar Creek, and came to the Vesólia Sópka about dusk. The moon was shining, although there were dark clouds coming up, and we pushed on as fast as our tired dogs would go. Stopping a moment to rest, I improved the opportu-

nity to sketch the scene, of which the frontispiece gives a good idea. The crust was covered with about three inches of soft dry snow, and the Hudson Bay sled pulled very hard. Constant exercise of the lungs and whip were necessary to keep the dogs up to their work. On we trudged, following the track, lifting the sleds up and down gullies, pushing through occasional drifts, and shouting encouragement and admonition to the dogs, calling each by his name.

We did not turn off from the tundra at Ulúkuk, but kept on, until I noticed that there were no new tracks, and called to Kurílla, inquiring where the Russians were. He replied that he did not know; perhaps they had camped at Ulúkuk; but as that road was such a bad one he had kept on the Indian trail across the tundra direct to Iktígalik. I approved of his determination, but saw that we must reach the latter place before we could camp, as the trees along the edge of the tundra were small and sparse, the wind was rising, snow beginning to fall, and poorga impended. At last we reached the river, and collected all our energies, as the blast, carrying snow and almost blinding us, was increasing in severity. In half an hour we passed a fish-trap, and soon after, the welcome sight of the tall caches against the sky met our eyes. We carried the sleds up the bank with a will and a shout, which brought the Indians like marmots from their burrows. An Indian who had been with us during the early part of the day came out and inquired where the Russians were. Kurílla replied that we did not know, probably at Ulúkuk. The air rang with their shouts of derision, at the idea that a sick man, with heavy loads and feeble teams, should have outstripped the fine dogs and empty trains of the Russians. The poor dogs were unharnessed, and immediately curled themselves up to sleep, refusing to eat, from fatigue. It was with a pardonable feeling of pride that I took my place in the house by the fire, and discussed the day's work over a cheerful cup of tea. By the winding road which we were obliged to take, we had made not less than fifty miles, unquestionably the longest day's travel with loaded sleds which had been made in that part of the territory within the memory of the oldest inhabitant.

The next morning, after a long night's rest, we arose and fed the dogs. The teams were loaded and harnessed up, and I spent

a half-hour purchasing deer meat and úkali for my dogs on my return. We then started down the river, and after a mile or two stopped to obtain some water. Just as we were about to push on, the Russians, who had been travelling since daybreak, came over the bank. Kámaroff advanced, cap in hand, and inquired where I spent the night. I informed him, and he remarked that we had made an excellent day's work yesterday. It was now my turn, and I replied, "Yes, Kámaroff, that is the way the Americans travel!"

About three o'clock in the afternoon we reached Unalaklík. Here we found Ostrofskoi alone, Pópoff having been recalled to the Redoubt. After some trouble, I hired a Máhlemut sled to take our goods on to St. Michael's. All the Innuit were away hunting deer, only two or three old people remaining in the village.

After a cold, rough journey, we reached the Redoubt about noon of the 23d. The wind was very strong, the ice broken and piled up in barricades twenty feet high. The temperature averaged twenty-eight below zero. We were just in time for a hot bath, and Stepánoff received me with great hospitality. A private letter from the Russian ex-governor had informed him of the circumstances of the sale and transfer of the country, and the arrival of General Rousseau at Sitka. The winter expeditions from the Redoubt had been very successful, and more furs had been obtained than for many previous years.

I obtained two bags of flour, some powder, and tea, from Stepánoff. At home it would sound queerly to talk of going three hundred and fifty miles for a bag of flour, but here it was well worth the trouble.

Though still very weak, I felt perfectly well, and could ascribe my recovery only to the exercise of will required by the journey.

On the 27th of February I started with Pávloff for Nuláto. We were able to pass around Tolstoi Point on the ice, an unusual occurrence, which facilitated our journey. We arrived at Unalaklík on the 29th. I found that Ostrofskoi had made away with a good many of the úkali which I had relied on to feed my dogs on the return. It was impossible to obtain restitution, as úkali were not to be had for the asking. These fellows are inveterate thieves.

On the 2d of March I reached Iktígalik. I had hired several

extra dogs from the Russians, and found two of my own here, which Andrea had stolen. The place was crowded with the Káiyuh Ingaliks, and I gave him a rating for his dishonesty, in their presence, which made him sneak away like a whipped cur.

We determined to strike on to the tundra directly beyond Iktígalik, and I would recommend this plan to all future travellers. It is far preferable to the old route by way of Ulúkuk. By keeping along the bases of the Ulúkuk hills, a nearly even road may be obtained as far as the Vesólia Sópka. At the first bank beyond Iktígalik the runner of the new sled carrying the bidarrá broke short off. My mortification was great, and the Russians passed on, thinking us disabled for several days at least. To make a birch runner, the wood must be bent while green, and then well seasoned. To do that here was out of the question, and we lighted our pipes and sat down to consider what could be done. After consultation, Kurílla started off with the axe over his shoulder, and I made a good fire, and put on the chynik, determined to be comfortable, whatever might turn up. Kurílla returned with a slender spruce tree, which he rapidly hewed into the shape of a runner. I sent an Indian back to the village to borrow an awl and buy some small sealskin line. As soon as the runner was hewn out, we bent it in the fire, and in two hours we had the sled completely repaired. The new runner was thick, heavy, and clumsy, but answered the purpose very well. Deerskins, to prevent the sealskin from chafing, were laid on the sled, which had no rail. The boat was then replaced, and strongly lashed. We took our tea, and proceeded on our way. In the afternoon we passed the Russians, who had camped near a small stream. They were much surprised and disgusted at seeing us so soon. We camped just beyond the Vesólia Sópka. I had the heaviest load on one of the Hudson Bay sleds, Kurílla had the bidarrá, and an Indian called Blackbird had the other sled.

My team comprised three dogs. The leader was a fine black dog named Ikkee, who had a magnificent bushy tail, which was always erect and curly. The next one was black and white, and called Sawáshka, a hard worker and of amiable disposition. Next the sled was old Kamúk, my favorite, and the ugliest dog in the brigade. His tail, poorly furnished with hair, was usually

between his legs ; his ears were short, and scored with the marks of many battles. His face was stolid, and exhibited emotion only when feeding-time came, or when some other dog ventured too near or lagged behind. His body was large, and his legs were like pillars ; his color was white, with dirty spots. Altogether he looked a good deal like a lean pig. But how he would pull !

A description can give but a faint idea of dog-driving. It is an art in itself. The nature of dogs is cross-grained, and they frequently do the wrong thing with apparently the best intentions. Each has a peculiar look and character. Some are irreclaimably lazy, others enjoy hard work unless pushed too far ; some are greedy and snappish, others good-humored and decorous. All are very practical, showing affection only for the man who feeds them, and for him only as long as he feeds them. Hence the voyageur should always feed his own team himself. They dislike the whip, not only when in use, but in the abstract. They will always destroy one if they can get at it. The whip is made with a short handle, a very long lash, braided of leather or sealskin, and usually loaded with sheet lead or bullets in the core.

As we walk behind the sled, which ordinarily travels about four miles an hour, we have an excellent opportunity of studying dogs. One habit appears to be ingrained in their nature. It exhibits itself at street-corners in cities, and at every bush, stump, or lump of ice which they pass on the road. When travelling rapidly, some dog will stop twenty times an hour to examine any bush or twig which attracts his attention. If a leader, it checks the whole team ; if not, he usually entangles himself in the harness, and jumps frantically to release himself as he hears the well-known crack of the whip about his ears. If a log comes in the way, and the driver is not ready with his help in urging the sled over it, down they all drop on their haunches, wagging their tails and looking about with a pleased expression, or uttering a sentimental howl. With a crack of the whip, and a shout to Kamúk to stir himself, their reveries are broken, and we go on. Going down hill, the whip and lungs are again called into requisition, to keep the dogs out of the way of the descending sled. It has been said that no man can drive dogs without swear-

ing. I think it is in a measure true. At all events, he must have a ready store of energetic expletives to keep them on the *qui vive*. In Russian America we always used the indigenous epithets, which, as we did not understand them, were hardly sinful. If there is a tree near the trail, the dogs invariably try to pass it on different sides, until checked by their harness; they constantly exhibit such idiosyncrasies, and it was lucky for Job that he was not set to dog-driving: if he had been, I fear his posthumous reputation would have suffered.

At noon we stop for a cup of tea. Here the true voyageur exhibits himself in building the fire. A greenhorn or an Indian will make a conical fire, at the side of which you must place your chynik, and wait until it chooses to boil. A white man's fire is built in layers. The sticks in each layer are parallel with each other, and at right angles with those in the layer beneath. A few chips are placed upon this pile, which presents a broad, flat top, on which you set your chynik. A few shavings are whittled from a dry stick, and you light your fire on the *top* of the pile. The free circulation soon puts it all in a blaze, your kettle boils in ten minutes, you drop in your tea and let it boil up *once*, and you are ready for "chy peet." If the fire be lighted at the bottom, it takes twice as long to kindle, and if you boil your tea more than an instant, it is ruined. Many travellers drink a caustic decoction of tannin, which they call tea; such unfortunates are to be pitied.

Tea over, you empty out your chynik, and set it in the snow a moment to cool, that you may not burn your sled cover. Having replaced it, and seen that the dogs are untangled, you shout to Kamúk, "Be off, you old sinner!" Down goes his tail, and away you go. A greenhorn will have burnt his skin boots meanwhile, trying to warm his shins, and have put the axe where it will knock a hole in the chynik or drop out through the slatting of the sled-bottom, if you have n't looked out for him. The wind blows the snow in his eyes; his toes bump against the bar of his snowshoes; now and then he trips himself up with them: truly, the poor fellow has a hard time. If he has the right grit in him, he will soon learn, and laugh at these things as you and I do. Up hill and down dale, until it begins to be dusky in the south. Greenhorn thinks it is the west, because the sun sets there. In June we will show it to him setting due north, and rising there within half an

hour after it went down. The chief of the brigade has been on the lookout for a place where there is plenty of dry wood, and having selected his ground, gives the signal for halting. Kurílla, who delights in showing his proficiency in the use of the American axe, makes a straight wake for yonder dead spruce. Greenhorn takes an axe, and chooses a small tree to begin with. Somehow or other, the chips don't fly as they do over yonder; but, by dint of chopping all round like a beaver, it finally falls, burying him under the branches in the deep snow, where he must stick until somebody picks him up.

Meanwhile the direction of the wind is noted, and the camp placed accordingly; — not so that it will blow on the backs of those who sit in front of the fire, — because this always makes an eddy where the smoke will remain, choking everybody, — but so that the wind will blow on their sides, lengthways of the camp, and carry the smoke away. In March we must excavate the snow to a depth of eight or ten feet before we can find solid ground to build our fire on. If built above the ground it will gradually sink beneath the snow, leaving us in the cold. One Indian goes in search of water, another cuts spruce boughs, and you instruct greenhorn in the art of placing the twigs, stem down and tips up, so as to make a soft and springy bed. A green log is placed at the foot of the bed, to keep the blankets out of the fire. Some one is cutting poles for a temporary stage. On this the sleds are placed, with their loads intact, to keep them out of the way of the omnivorous dogs. The harnesses are also hung out of reach for the same reason. Then each dog receives his supper of one dried salmon, and you carry your blankets to the camp. Kurílla comes staggering under the weight of a huge back-log, and follows it up with half a dozen more, and also a supply for morning use. The camp being made, and everything else done, we finally light the fire. Greenhorn asks why you don't do that first, and you explain that the effect would be to keep everybody in the vicinity warming themselves, while the camp was unfinished, and hence the other necessary work would be slighted.

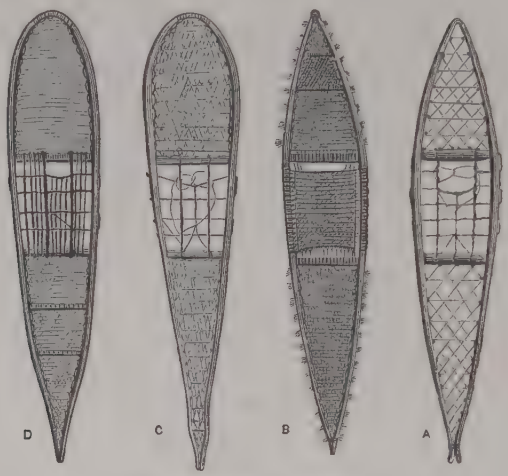
The ever grateful cup of tea being ready, and such other provisions cooked as you may have, you enjoy the evening meal and discuss the events of the day. Supper being over, you light your

pipe. What demon would have the heart to deprive the weary voyageur of his tobacco, — or what money would buy the pleasure which he derives from it? Oceans of whiskey would poorly replace his cup of tea, and untold gold would fail to purchase his pipe.

That delicious fifteen minutes being over, one last glance must be taken at the sleds and dogs. As you return, the inmates of the camp are invisible, beneath the surface. The fire and smoke and glow, which issue from the excavation in the snow and illuminate the dark evergreens behind the camp, remind one of the mouth of Inferno. The deerskins are spread; if you are luxurious you have a small pillow, if not, you take the biscuit-bag as a substitute. Water being scarce, a large cake of snow is impaled on a stake before the fire. Beneath it is the chynik, which soon fills with water as the cake melts. Your nips and the straw from your boots are hung in the smoke, to be thoroughly dried for to-morrow's use. Unless this precaution is adopted, you will have cold feet the next day. You cover yourself with a blanket on which skins of the arctic hare or rabbit have been sewn. This forms a light but very warm protection. I have slept comfortably with nothing else and with the air at sixty below zero. You pull your head entirely under the blanket, leaving a very small hole for air, and if the dogs, who like a warm corner, do not come and lie down on top, you may enjoy undisturbed the sleep of the just.

Leaving our camp in the morning, we pushed on among the trees toward Beaver Lake. Every step was taken on snowshoes. The snow was blown in our teeth, and the wind howled in such a way that we knew poorga was raging on the tundra. Near the edge of the timber at Beaver Lake we found an old camp. This we cleaned out and enlarged, making a first-rate camp of it. It was useless to go farther, as there were no trees and it was impossible to travel over the open country. The great spruce trees rocked and moaned with the fury of the blast, and the snow flew in sheets far above our heads. The next morning it was even worse. As we were well supplied with provisions and dog-feed, I concluded to remain where we were. In the afternoon the Russians came up. I invited them to occupy part of our camp, and told them they could not go over a mile farther, and then would not be half as comfortable. But no; their energy was not so easily daunted, and on they went.

I have spoken of travelling on snowshoes. To travel without them in winter is impossible, but sometimes on an old, well-beaten road, or with a hard crust on the snow, and while travelling over ice, they are not needed. The different kinds of snowshoes are, in a measure, characteristic of the locality where they are used.



Different kinds of snowshoes.

The Innuit snowshoe (A) is small and nearly flat. It is seldom over thirty inches long. The netting is open and strong, being made of fine remni. That which supports the foot is made of strong mahout, which passes through holes in the frame. It is strong, simple, and well adapted for walking on the hard snow of the coast. Both shoes are alike.

The Ingalik snowshoe (C) is much larger. Mine were five feet eight inches long, and strongly curved up in front. They are always rights and lefts, a slight difference being made in the curves of the frame of the two shoes. They are much wider in front, and the netting, which is of deer sinew twisted into twine, is much closer than in the Innuit shoes. The netting under the foot is the same. In all the snowshoes the strings are alike. Two short loops over the toe, and a long one around the foot above the heel, fasten it to the foot. In walking, the toe sinks into an opening in the netting provided for the purpose. Beginners generally strike their toes against the bar, but after some experience they learn how to adjust the loops and prevent this.

The Kutchin snowshoe (D) is made a little smaller than the Ingalik pattern, but much in the same style. The netting is much closer and finer, and is made of fine line, cut from prepared deerskins, called babíche. The whole shoe is prettier and more artistic. It is frequently painted and ornamented with beads.

The Hudson Bay snowshoe (B) is very small, thirty inches being the regulation size. This is in order that it may sink deeper in the snow and beat a better road for the sleds. It is sharply curved upwards in front, and is furnished with a knob to break the crust of the snow. The frame is flat, not rounded as in the other kinds. The foot netting is put on around the frame, and not through holes in it. All the netting is very fine and close, and made of babíche. They are generally painted in gay colors, and ornamented with tufts of colored worsted. The latter in moist snow must be a great nuisance, as the snow must stick to them and greatly increase the weight. In hunting, the Hudson Bay men use the larger Kutchin shoe. The latter is probably the best of all for general use.

The next morning the wind had gone down, and we started very early. We passed the Russian camp, about a mile beyond ours, and soon overhauled them on a side hill, where they were stuck in a large drift. I proposed to go ahead and break the road for them, at the same time taking some of their load, though my sleds were already the heaviest. My offer was accepted, and we led the way for the remainder of the trip. We camped near the Ass's Head that night, and about ten miles above Kaltág on the Yukon the following day.

The road on the river was exceedingly bad. The long March day and the warm sun made the snow moist and sticky. Each snowshoe would raise ten pounds adhering to it, and it was extremely hard travelling. We took tea three times during the day. Tired out with running before the dogs, Pávloff's Indian lay down on the snow and refused to run any further. None of the Russians were in a condition to take his place. We were only some three miles from Nuláto, and I gave my sled to the runner, and took his place. It was really a relief to exercise another set of muscles, after walking behind the sled and pushing all day. We found all in bed at Nuláto, as we were not expected for several days, and the Russians were especially surprised to see me, sup-

posing me to have been too sick to return immediately. Pávloff's wife had the samovar ready, and we all took a cup of tea together, which did much to relieve the fatigue of the day.

The Russian fish-trap was catching nothing. Mine had been very fortunate. There was a pile of several hundred frozen fish in the storehouse, quite sufficient to feed my dogs. The next day Blackbird was handsomely rewarded for his work, and sent back with the extra dogs to Unalaklík.

Repairs being needed on the fish-trap, I discovered that the Russians had appropriated all my extra wood during my absence. After some trouble I obtained restitution.

Having a small piece of glass, I inserted it in the window. After getting the light all winter only through parchment, it was a great relief to be able to peep out occasionally, and to admit a few rays of pure sunlight.

The plans which had been settled upon by the Russians were about as follows: A raft was to be built in the spring, and on his return from the annual trip to Nuklukahyét, Pávloff was to embark with all the Russian employés and goods belonging to the Russian American Company, and make the best of his way to the mouth of the river, where boats from the Redoubt would meet him and convey them to St. Michael's.

In the latter part of the month of March I made several expeditions, without dogs, to the hilly region back of Nuláto. In this manner much geographical and geological information was obtained.

About the 1st of April, Bidárshik, one of the Koyúkuns who had accompanied us to Fort Yukon, arrived from the mountains, where he had been deer-hunting. He brought a sled-load of meat, of which I secured the greater part, — a most acceptable addition to our monotonous fare of fish-soup. He brought the information that Larriówn was endeavoring to excite the Koyúkuns to active hostilities against the Nuláto post. Larriówn was one of a family of five brothers, all influential men among the Koyúkuns. One, whose name I could not obtain, had recently died. He had been concerned in the first Nuláto massacre, and was accused of having killed Barnard. Since that time he had committed many outrages. A Yukon Indian, named Nikolai, who had been extremely useful to Major Kennicott's party in their explorations about Koyúkuk, had

an exceedingly pretty wife, and, with his brother, was possessed of much property. In the fall of 1866, Larriówn's brother induced Nikolai and his brother to accompany him to the mountains after deer. There the former killed both of them, and hid the bodies, securing their guns and ammunition. All the autumn and far into winter, the other Indians sought the brothers in vain. At last the murderer, tired of hearing about them, led the searchers to the place where they lay, and boldly avowed his crime. He then went to the house where they had lived, and plundered it. Nikolai's mother reproached him with the unprovoked murder, and he threw her into the fire, forced Nikolai's wife to accompany him, and fled to the mountains. Of the whole family, only the little son of Nikolai and his sister, who were away, escaped. There was no one to revenge them, and the murderer escaped unpunished. In the fall of 1867 he died of pleurisy. Much sickness of the kind prevailed during the winter, and Larriówn, whose dictum as a great shamán was not to be denied, accused the Russians of having caused the sickness and death by their sorceries. This may seem incredible, but such reasoning is characteristic of the Indian mind. The remaining brothers sent beads to the various Indians as an inducement to attack the Russians; but so far they had hesitated, from the scarcity of provisions. Bidárshik, under promise of secrecy, divulged the plot to me, and begged me to leave Nuláto. I took him into the magazine, showed him my stores of ammunition and my arms, and told him that I was prepared for anything; that the Russians had given me the use of a house in the fort, and if they were attacked I should assist them against their enemies,—giving him permission to inform the Koyúkuns of the determination. Rumors were rife, during the entire spring, of a proposed attack, but none was attempted.

Details have already been given of the practice of shamánism among the Indians, and the various tribes have been described. A few more particulars in regard to them and their mode of life may not be uninteresting.

The Indian character, with some modifications, is the same almost everywhere. The Ingaliks are peacefully inclined, and as industrious as any Indians. They are more honest than the majority of uneducated whites, and much more so than those tribes who

have been degraded by the use of liquor. They are courageous, but not bloodthirsty, and are easily controlled by a firm hand. Avarice appears strongly in their characters; the affections are but slightly developed, and are exhibited only toward their children. The latter are obedient and respectful to their parents, but exhibit no love for them. The old people live on odds and ends of food which the young ones do not eat; this seems rather to be a custom than any deliberate neglect. The opinions of the old men are always consulted, and usually followed. Foster-children are not uncommon. The fruit of their labor belongs to the person who reared them, and they are in a manner slaves, but still possess property of their own, and marry when they like. The authority of the foster-parent is retained as long as he lives. Children are anxiously desired, even when women have no husbands. The Ingalik women are less inclined to sensuality than many others, but are by no means strict in their morals. Incontinence on the part of a wife is seldom punished with anything more than a beating. Excessive laziness or ill-temper sometimes induces the men to discard them entirely. The women are rarely chastised, and usually well treated. Both sexes are dirty about their persons, and handsome women are exceedingly rare. The old ones are often hideous. The Ingaliks are tall, but more slender than the Innuit, and their legs are often ill-shaped. This comes from constant sitting in a small canoe in summer, and walking on snowshoes in winter. They are seldom very muscular; those who live on fish are invariably the most dirty, weak, cowardly, degraded, and least intelligent. Their number appears to be decreasing. Few women have more than two children; twins are almost unheard of. Many women are barren. The number of deaths annually increases, from their habit of inhaling the smoke of the Circassian tobacco into the lungs, which greatly adds to the prevalence of lung diseases.

While the Indians are exposed to privations of every kind from childhood, they are, if anything, less hardy than the whites. A white man of ordinary strength and endurance can invariably tire out any Indian, as soon as he has become accustomed to the mode of life. I believe that the white can surpass the Indian in everything, with but little difficulty, even in those things to which the latter has devoted his attention from infancy. All my own

experience tends to confirm this opinion, and it is certain that Indian sagacity has been greatly overrated, especially in the fables of such romancers as Cooper.

Diseases are quite as prevalent among them as among civilized people. As yet, among the Ingaliks, zymotic diseases are unknown. Pleurisy, pneumonia, bronchitis, dyspepsia (not rare), asthma, rheumatism, colic, hydrocephalus, calculus, urethritis, and hemorrhoids were noticed, and various mild diseases of the skin, boils, and small tumors are not uncommon. Ophthalmia is produced by the reflection of sunlight from the mist arising from the melting snow in the spring. To obviate this, they, as well as the Innuit, make use of goggles after the annexed pattern. These

Snow-goggles of the Yukon Indians

are made of soft wood, cut to fit the face, and tied by a string behind the head. They are pierced with one or two slits which admit of vision. The inside is blackened with charcoal, and some have a small ledge over the slit, as a shade, also blackened. I found these goggles superior to those of green glass with which we were provided.

Curiously enough, a tænia, developed from hydroids found in the reindeer, is occasionally found among these Indians. I have seen humpbacks, club-feet, and other malformations among Koyúkuns, and once a deaf-and-dumb man. Strabismus is common, and I have seen several cases of cataract.

Their remedies, besides the rites practised by the shamáns, are few and simple. Bleeding, scarification, actual cautery, ligatures, steam baths, and fasting, are practised, but they have no knowledge of the virtues of any roots or herbs. The women seem ex-

empted from the curse of Eve. Delivery takes place in a few minutes, the mother kneeling; no pain is experienced, and she is about again and at her work in half an hour. The infant is rubbed with grease, washed and put to the breast. They are rarely weaned under three years.

The Indians are devoid of fortitude, crying at a scratch or cut which we should consider trifling: this may be partly ascribed to ignorance. They are short-lived, few men reaching forty-five. The women live longer, many reaching sixty. Their exact ages can seldom be determined, as they keep no record and soon forget. They can count one hundred, but no further.

The work is divided among the sexes much as among the Innuit. There is no such enslavement of the women as exists among the Kutchin and other eastern and southern tribes. The men do nearly all the hard work. They have no pride of family such as is so prominent among the Koloshes, and few know who were their grandfathers. A very few of the Ingaliks have more than one wife; none, as far as I know, have more than two. The Koyúkuns are more lax in this respect. Cousins do not marry among the Ingaliks, but there are no rules observed by the Koyúkuns in regard to marriage. There is a superstition among the Koyúkuns that a youth must not marry until he has killed a deer, otherwise he will have no children. They believe in love-philters, made of an owl's liver, which, to be successful, must be administered without exciting suspicion. The totemic system, properly so called, is unknown among them, but they have the practice, as described among the Innuit, of selecting a patron spirit. Some substitute for an amulet the small brass crosses distributed by the Russian missionaries; sometimes both hang around the neck on the same string.

The Kutchin have always possessed the system of totems, and I quote the following remarks from an account of them by William L. Hardisty, Esq., of the Hudson Bay Company. All the Kutchin are divided into three castes or totems, called respectively *Tchit-che-ah*, *Teng-ratsey*, and *Nat-sah-i*, according to Strachan Jones, Esq., late commander at Fort Yukon. Mr. Hardisty says: —

"With reference to the origin of caste it is difficult to arrive at a correct solution. I believe that they do not know, themselves, for they give

various accounts of the origin of the three great divisions of mankind. Some say it was so from the beginning ; others, that it originated when all fowls, animals, and fish were people, — the fish were the *Chitsah*, the birds *Tain-gees-ah-tsah*, and the animals *Nat-singh ;* some, that it refers to the country occupied by the three great nations who are supposed to have composed the whole family of man ; while others, that it refers to color, for the words are applicable. *Chitsah* refers to anything of a pale color, — fair people ; *Nat-singh*, from *ah-zingh*, black, dark, that is, dark people ; *Tain-gees-ah-tsah*, neither fair nor dark, — between the two, — from *tain-gees*, the half, middle, and *ah-tsah*, brightish, from *tsa*, the sun, bright, glittering, shining, &c. The country of the Na-tsik-kut-chin is called Nah-t'singh to this day, and it is the country which the Nat-singh were supposed to have occupied. The Na-tsik-kut-chin inhabit the high ridge of land between the Yukon and the Arctic Sea. They live entirely on the flesh of the reindeer, and are very dark-skinned compared with the Chit-sangh, who live a good deal on fish. Some of the Chit-sangh are very fair, — indeed, in some instances approaching to white. The Tain-gees-ah-tsa, taken as a whole, are neither so fair as the Chit-sangh nor so dark as the Nah-t'singh. A Chit-sangh cannot, by their rules, marry a Chit-sangh, although the rule is set at naught occasionally ; but when it does take place the persons are ridiculed and laughed at. The man is said to have married his sister, even though she may be from another tribe, and there be not the slightest connection by blood between them. It is the same with the other two divisions. The children receive caste from their mother : if a male Chit-sangh marry a Nah-t'singh woman the children are Nah-t'singh, and if a male Nah-t'singh marry a Chit-sangh woman the children are Chit-sangh ; so that the divisions are always changing. As the fathers die out the country inhabited by the Chit-sangh becomes occupied by the Nah-t'singh, and *vice versa*. They are thus continually changing countries. Latterly, however, these rules are not so strictly observed or enforced as formerly, and no doubt will soon disappear altogether. One good thing proceeded from the above arrangement, — it prevented war between two tribes who were naturally hostile. The ties or obligations of color or caste were stronger than those of blood or nationality. In war it was not tribe against tribe, but division against division ; and as the children were never of the same caste as the father, the children would, of course, be against the father, and the father against the children, — part of one tribe against part of another, and part against itself ; so that, as may be supposed, there would have been general confusion. This, however, was not likely to occur very often, as the worst of parents would have naturally preferred peace to war with his own children."

It is not improbable that the custom or system of totems originated in a desire to prevent war, and to knit the tribes more closely together. It is a well-known fact that most of the inter-tribal Indian wars have occurred between those who did, and those who did not, adopt the system. In all other known tribes the names of the totems are those of animals, and I doubt whether the similarity of the Kutchin names to words indicating color, referred to by Mr. Hardisty, is anything more than an accidental coincidence, or perhaps an error. The system is found in perfection among the Thlinkets or Koloshes.

The method of disposing of the dead has been described. The dances or festivals of the Indians are less varied and interesting than those of the Innuit. They are held at their yearly meetings at Nuklukahyét, or other neutral trading-grounds. Others are given by men who desire a reputation for liberality; others by the relatives of a dead person a year after the death; still others by the inhabitants of a village who desire to extend their hospitality to neighboring villages. These dances have been previously alluded to. Their choruses are less euphonious and less varied than those of the Innuit. Their dances have less of a symbolic character. Feasting and giving presents form the chief attractions at their festivals. The universal chorus is "He! he! ho! ho!" indefinitely prolonged. When the feast for the dead is given the presents are hung on a pole. Around this the dancing is done. The Indians wrap themselves in blankets, and the motions are simple jumping up and down, gradually moving sideways, as in the old game of "threading the needle." There are no graceful motions or posturings of the arms and body, as in the Innuit dances.

The Indians, particularly the women, are fond of singing, apart from their festivals. Their ears are very quick, and they soon catch up an air from hearing it sung once or twice. Our parties contained several good singers, who enlivened the evenings with patriotic and comic songs. The Indians soon caught up the airs; and "Tramp, tramp, the boys are marching," "Sixteen cents a dozen," and "Marching through Georgia" may now be heard from the mouth of almost any Yukon Indian. The women are fond of making up songs of their own, which they hum over their work. Some of these are full of sentiment and not unworthy of

preservation. The chorus always forms a prominent part. The following is a free translation, preserving the original rhythm, of one which I heard a Koyúkun woman singing as she sewed. It is a fair specimen of many which were translated to me, some of which I preserved. It is the song of a mother hushing her child to sleep, and the air was slow and soft.

"The wind blows over the Yukon.
My husband hunts the deer on the Koyukun mountains.
Ahmi, Ahmi, sleep, little one.

"There is no wood for the fire.
The stone axe is broken, my husband carries the other.
Where is the sun-warmth?* Hid in the dam of the beaver, waiting the spring-time?
Ahmi, Ahmi, sleep, little one, wake not!

"Look not for ukali, old woman.
Long since the cache was emptied, and the crow does not light on the ridge-pole!
Long since my husband departed. Why does he wait in the mountains?
Ahmi, Ahmi, sleep, little one, softly.

"Where is my own?
Does he lie starving on the hillside? Why does he linger?
Comes he not soon, I will seek him among the mountains.
Ahmi, Ahmi, sleep, little one, sleep.

"The crow has come, laughing.
His beak is red, his eyes glisten, the false one!
'Thanks for a good meal to Kuskokala the shaman.
On the sharp mountain quietly lies your husband.'
Ahmi, Ahmi, sleep, little one, wake not!

"'Twenty deer's tongues tied to the pack on his shoulders;
Not a tongue in his mouth to call to his wife with.
Wolves, foxes, and ravens are tearing and fighting for morsels.
Tough and hard are the sinews; not so the child in your bosom.'
Ahmi, Ahmi, sleep, little one, wake not!

"Over the mountain slowly staggers the hunter.
Two bucks' thighs on his shoulders, with bladders of fat between them.
Twenty deers' tongues in his belt. Go, gather wood, old woman!
Off flew the crow, — liar, cheat, and deceiver!
Wake, little sleeper, wake, and call to your father!

* I. e. the warm principle of the sunlight, which they regard as a personal spirit.

"He brings you backfat, marrow, and venison fresh from the mountain.
Tired and worn, he has carved a toy of the deer's horn,
While he was sitting and waiting long for the deer on the hillside.
Wake, and see the crow, hiding himself from the arrow!
Wake, little one, wake, for here is your father!"

These songs are heard in every lodge. Some attain wide popularity, others are unknown except to the singer, who measures the stroke of her paddle or the motion of her needle by the simple rhythm of the air.

The bow has long since given place to the gun among the Koyúkuns, Kutchin, and northern Ingaliks. Long, single-barrelled flint-locks have been obtained from the Hudson Bay Company at Fort Yukon since 1847, and at about the same time traders from the Sandwich Islands began to visit Grantley Harbor and Kotzebue Sound. The latter trade a small Belgian fowling-piece, double-barrelled and of small bore. These guns, with some ammunition, bring twenty marten-skins, and the Hudson Bay guns are sold for forty.

Their habits, though not as regular as those of the Innuit, still pursue a nearly uniform course, each successive year being much like the previous one, and only modified by the greater or less abundance of game and fish.

Life among the Indians is a constant struggle with nature, wrestling with hunger, cold, and fatigue; the victory is ever uncertain, and always hard-earned. The opening and closing of navigation are the two great events of the year. The months of April, May, and June are the hardest of the season. The snow is melting, ophthalmia attacks the deer-hunters, and the winter's store of food is nearly or quite gone. In May the geese and ducks arrive. The fish-traps are carried away by the rising water in the rivers, and few have sufficient ammunition to supply themselves with wild fowl for many weeks. The men take their canoes and ascend the small rivers, as soon as the ice breaks up and the freshets drive the beaver out of their winter houses. For a week or two they support themselves in this way, and then those who have been successful in trapping start for Nuklukahyét to trade. There they find the moose and deer driven by the mosquitoes into the river, where they may be killed. Bears leave their winter quarters, and their meat occasionally adds to the spring supply

of food. The women, and such of the men as remain at home, are busy making nets and seines from the inner bark of the willow and alder. The wood for the summer fish-traps is also prepared, and the baskets and other parts of the trap are tied together, ready for use. On the Lower Yukon the eggs of wild fowl are obtained in sufficient numbers to furnish a partial means of subsistence. This is also the season for making birch canoes. Early in June the king salmon (*Kahthl'* of the Ingaliks, or *chowíchee* of the Russians) begin to ascend the river. After the middle of July only stragglers of this species are caught. The chowíchee are followed by two or three other kinds, and the salmon fishery is well over about the end of August. During this period most of the Indians are on the river, fishing, splitting, and drying the fish for winter use. Some are smoked, but the greater part are simply dried in the sun. They have no salt, and never use it, even when it might be procured from the Russians. In consequence many of the úkali have a tainted flavor. Whitefish are caught and dried at the same time as the salmon, but are smaller, and not so extensively fished for. They are most plenty and in their best condition in September. In the latter part of October the ice puts a stop to fishing, until it is strong enough to set the winter traps. In August many Indians repair to the hills, where the reindeer are in prime condition, fat, and less timid than at other seasons. The fawns are also large enough to make their skins of use. Moose are very rare on the Yukon below Koyúkuk. In August the young geese are fledged, but cannot yet fly, as their wing-feathers are not fully grown. The old ones have also moulted, and many of both kinds are caught in nets. In October and November the white grouse have returned to the willow thickets on the river, where they are snared by hundreds. In December the winter fish-traps are put down, and some deer-hunting is done on the mountains. Trapping begins in October; before that, the furs are worthless. In December and January, trading commences with the Innuit for oil and sealskin. In February and March the fish-traps and snares for grouse and rabbits are their principal reliance. In the latter part of March the starving season sets in again. By some tribes, April is called the "hunger month." In May, rabbits are very plentiful for a week or two, when the wild fowl arrive in millions, and the yearly round is completed.

The Koyúkun and Ingalik names for women generally end in "il'no" as *Tállo-ilno*, "dashing water," &c. The names of men frequently end in "ala" as *Kúsko-kála*, "he who strikes," &c., but are not so regular in their terminations as the female names. With the Kutchin the father takes his name from his child, not the child from the father as with us. Thus, *Kwée-ech-et* may have a son and call him *Sáh-nu*. The father then takes the name *Sah-nú-tee*, and his former name is forgotten. Sometimes the mother will drop her name, and be called *Sah-nú-be-han*, or Sah-nu's mother.* The same practice obtains among the Indian tribes to the south, as the Koloshes; but the western Tinneh are without it.

In war, when a Kutchin Indian kills his adversary, he cuts all his joints. They are governed by the same chiefs in peace and war. The authority of a chief is very limited; the Indians are very unruly, and indisposed to submit to authority. The chiefs are chosen on account of their wisdom, wealth, or courage, and not on account of birth. They have no insignia of office, and only such privileges as they can take; none that the others can withhold from them. This undeniable fact has been universally ignored in the dealings of the United States Government with the Indians.

The chiefs and old men are all who are entitled to speak in council; but most young men will not hesitate to rise and give their elders the benefit of their wisdom. Among the Han Kutchin a metal ring is sometimes used in the nose instead of the dentalium ornament of the western Tinneh. Among the eastern Tinneh the women are literally beasts of burden; but they have the privilege of disposing of their daughters at any age; the fathers and brothers having no voice in the matter, according to their customs. They have the singular custom of not cutting the nails of girls until they are four years old. The reason they give is, that, if they did so earlier, the girl when grown up would be lazy, and unable to embroider in porcupine quills, an art which they carry to great perfection. The children are seldom weaned until three years old. They arrive at the age of puberty at about twelve or fourteen. Some of the women reach a great age; one

* *Vide* account of Kutchin tribes by Strachan Jones, Esq., in Smithsonian Report, 1866.

at Fort Simpson was estimated to be ninety-seven years old. The eastern Tinneh and Kutchin tribes far surpass the western Tinneh in their proficiency with the needle, and in their love for ornament. The latter care little for trinkets, seldom paint, and will barter their furs only for tobacco and useful articles. This should be borne in mind by traders.

Preparations for the spring shooting soon became necessary. I had no shot, and was obliged to make all I needed. The Russians are accustomed to hammer lead out into slender bars, to cut these in small cubes, and roll them. This process being exceedingly laborious, I hit upon another plan. I took a piece of walrus tusk and planed it off until it was about half an inch thick, flat on each side, and about two inches wide by six long. Taking a large nail, I filed the point and rigged a "fiddle-bow drill." With this I bored a hole about three eighths of an inch in diameter, a little smaller at one end than at the other. I then filed off a little more of the point and bored another hole a little smaller, and repeated the process until the last hole was about the diameter of a duck-shot. I ran my lead into small bars, and, greasing them well, wire-drew them through the holes, beginning with the largest. The result was lead wire of the diameter required. This was cut up into pieces, each piece as long as the diameter of the wire. These were then rolled with a little ashes in an iron pan under a flat stone. This produced shot nearly as round as dropped shot, though not polished. In this way I manufactured seventy pounds of shot of different sizes, which answered every purpose. It was a work of great labor, but less so than by the Russian method. A man can make in this manner about three pounds in a day. The Russians at Nuláto were each furnished every spring with five pounds of lead and half a pound of powder. With this they must supply themselves with game, or go hungry. The same practice is usual at Fort Yukon, except that the men are furnished with manufactured shot.

As spring approached, we made ready for our journey to the Yukon-mouth. The collections of natural history grew apace. Many hundred birdskins, and other specimens, were brought together, some of which had not previously been collected. On the 21st of April, Tékunka paid us a visit. He was accompanied

by all the Káiyuh Ingaliks who were returning from Ulúkuk. While sitting peaceably in the casarmer he was insulted and struck by Shabounin, a convict from Archangel in Russia, who had been sent to Nuláto to build the raft on which the Russians were to descend in the spring. I heard Kurílla calling to Pávloff, in the yard, that Shabounin was killing Tékunka. I rushed into the casarmer at once. Tékunka was standing on one side, his face bleeding, and hurling defiance in good Russian at his assailant. The Russians were huddled in one corner, unarmed, and cowed by the crowd of Ingaliks, each with his hand on his gun, which half filled the room. Sure of his power, though himself unarmed, Tékunka did not spare his tongue. He told them that he held their lives in his hand. "A word," said he, "and my men wash this floor with your blood. You call us 'dogs of Indians!' We know what you are, — murderers, thieves, and outlaws, driven from Russia for your crimes! Yet you come to our country and abuse us without reason, take away our daughters, and pay us with a leaf of tobacco for furs which you cannot trap yourselves! Why should I not avenge this unprovoked insult? Why do I not order my men to exterminate you like vermin? Because I had rather stand here and tell you in your own casarmer that I hate, despise, and defy you!"

Pávloff now entered, and was called upon to redress the injury, which he did sullenly and reluctantly. Shabounin was rebuked before the Indians for his conduct, and a present of tobacco and ammunition was made to Tékunka, who received it with unconcealed disdain. The Indians slowly left the room, and I followed them. They took their baggage and sleds, and left the fort. It is very seldom that such an exhibition of spirit is seen among these Indians, but Tékunka was unusually intelligent, and had worked in the fort among the Russians when young. It must also be said that such an outrage on the part of any Russian had never before occurred at Nuláto, and probably very seldom anywhere.

On the 11th of April the first swallows appeared, and on the 27th Kurílla earned the pound of tobacco by killing the first goose of the season.

The Russian raft was well under way, and was a clumsy concern, shaped like a flat-iron, and provided with high bul-

warks, a mast, rudder, or rather sweep, and a sail. They informed me that it was after the pattern of the rafts on which timber is floated down the rivers of Russia which flow into the Northern Sea.

Meanwhile the skin had been taken off our little bidarrá, well oiled, repaired, and replaced. The mast, oars, and sail were manufactured, as well as an enormous paddle, which Kurílla, in his capacity as coxswain, proposed to use himself. The Russian bidarrá was made ready for their trading-voyage to Nuklukahyét. Johnny would accompany them, and go on to Fort Yukon with the Indians. He was a useful little fellow, but gratitude or affection formed no part of his nature, and I did not expect to miss him much.

On the 24th of May the Nuláto River broke up, and the water and ice came down with a rush. About four o'clock in the afternoon the ice on the Yukon moved a little, and then stuck fast. An ice-barrier fifteen feet high formed near the bluff north of Nuláto. This remained several days without change. On the 28th I went up to the Klat-kakhátne River, and crossed in an old birch canoe which I found there, after hewing out a rough paddle, and leaving my axe in a dry log, four feet above the water. On the other side the beach between the ice and the high perpendicular bluff was only about six feet wide. I collected here a number of interesting fossils which had been uncovered by the melting snow. Suddenly I heard a crash, and the water began to rise very rapidly. The barrier had broken, and I had to run to escape being crushed between the bluff and the enormous blocks of ice which the rising river ground against it. I was just able to keep pace with the water, and found my canoe on the little point quite submerged. On the other side the log, with the axe in it, was floating away with the ice. I emptied the canoe, and paddled after the axe, and got safely ashore on the Nuláto side. Here I stopped awhile and enjoyed the sight. Blocks of ice six feet thick were driven against the bank, cutting off large trees, and carrying ice and turf many yards inland. In some places the ice was piled thirty feet high. I only regretted that my artist companion of the previous year, Mr. Whymper, was not there to preserve the scene with his ready pencil. The break-up of 1867 was nothing to it. At the fort the ice came

close to the bank. A little more, and the buildings would have been in danger. Pávloff said that he had seen a similar freshet only once before in fifteen years.

The barrier being removed, the water soon began to fall, and left the great blocks and piles of ice stranded all along the beach. There was hardly room to land a boat anywhere near the fort.

We now set about packing up in earnest. The store was half full of goods, which I could not carry away. The boxes of collections, with our baggage, filled the bidarrá. She was a little beauty, well shaped, light, and elegant.

The season was very late. On the 1st of June, Pávloff and his men left for Nuklukahyét. The river was full of ice, and Tékunka and his men had not appeared; so I was still delayed. Johnny departed with the Russians, not even bidding me good by, although he was loaded with articles which I had given him. He had letters for Mr. McDougal, the Fort Yukon commander, which I took pleasure in addressing to "Fort Yukon, Alaska Territory, *United States of America*," as the Scotchmen had insisted against all reason that the post was situated on the British side of the line. As my Indians did not make their appearance, I secured Kurílla's brother, — "Monday" by name, as he was engaged on that day, — and determined that, if Tékunka failed to keep his promise, I would start the next day, and trust to luck to obtain another man somewhere on the river below.

CHAPTER VI.

Departure from Nulato. — Lateness of the season. — Yeto. — Kwikhtana barrabora. — Lońka's. — Habits of the beaver. — Swan-shooting. — Indian carvings. — First Indians. — Klantilinten. — A letter. — Meeting with the Mahlemuts. — Anvik. — The Stareek. — Pottery. — Sand-hill cranes. — Canoes. — Leather village on the Shageluk. — Great abundance of food. — Demand for liquor by the Mahlemuts. — Dances. — Attack and narrow escape. — Leave the village. — Manki. — Ekogmuts. — Loon-cap village. — Carvings, old houses and graves. — Great breadth of the Lower Yukon. — Arrive at the Mission. — Pass the Great Bend. Fishing-village. — Myriads of wild fowl. — Energetic collection of specimens. — Rasbinik village. — Starry Kwikhpak village. — Obtain a guide. — Andreafisky. — Tragedy in 1855. — Mistake of guide. — Arrive at the Uphoon. — Kutlik. — Emperor geese. — Arrival of Telcezhik. — Go on to Pastolik. — Beluga-hunting. — Innuit carvings. — Drawings on bone — Rise of the water. — Elephant bones. — Start for the Redoubt. — News of the ships. — Arrival at the Redoubt, and meeting with old friends. — —Traders. — Embarkation for California. — Abuses prevalent in the new territory. — Value of a territorial government. —Necessary legislation. — Disparagement of the territory. — Arrival in San Francisco.

EVERYTHING was ready for our departure. The bidarrá was almost transparent from the oil which was smeared upon the outside, and inside it was as dry as a bone. Tékunka had apparently deceived me. There were no signs of him or his men. Long experience had inured me to such disappointments, but there were few Indians at Nuláto, and it was difficult to fill the place of those whom I had expected. By giving to Monday's mother all the úkali and oil which were left over, I induced him to go with me, as the old woman, with these provisions, would not suffer from hunger before his return.

On the morning of the 2d of June everything was put aboard. The supplies which I left behind were put into the storehouse, and the door fastened with a padlock and chain and then securely nailed up. The Koyúkuns were already threatening to burn the post as soon as the Russians left it, but, in case they did not, the goods I left behind might prove of some use to somebody.

The beach in front of the fort was covered with large blocks of

ice, and the quantity of ice in the river was much greater than usual for the time of year. We pushed off with some difficulty, on account of the low water, and finally reaching the channel, took a last look at the old fort of Nuláto. The day was cloudy and cold, with a head-wind. Not a mosquito had yet shown himself, a fact which proved, more than anything else, the uncommon lateness of the season. Our little company consisted of myself, Kurílla, Monday, and a little foxy Koyúkun dog called Bushy, which was my especial pet. The stars and stripes and the scallop of the Scientific Corps floated from the mast, which was also decorated with a broad-tailed arrow ornamented with a blue muslin fly. I took the stroke oar and Monday the bow, as Kurílla's skill was needed to avoid the numerous floating cakes of ice in the rapid current. I found that my sickness had unfitted me for severe labor, and after a few hours I changed places with Kurílla.

The river presented a very different appearance from that of the previous year, when we started up the Yukon. Now large blocks of ice were piled up on the shores, where they had been driven by the first high water; no weather had yet occurred warm enough to melt them. We took our daily tea near the Shamán Bluff, close by the coal seam, and, while enjoying our meal, Kurílla was quick enough with his gun to bring down a mallard which flew overhead. As we pulled down the river I was so fortunate as to secure a pair of the beautiful Harlequin duck (*H. torquatus*) which flew from the mouth of a small stream. This elegant duck is very shy and solitary in its habits, preferring the small streams which wind among the trees, away from the main river. We saw no Indians on the banks, as the fishing-season had not commenced. Late in the evening we arrived at Kaltág, and camped on the left bank. The ground was still muddy from being overflowed, and the willow leaves were still folded. At the Kaltág village we found Matfáy and his family from Ulúkuk. They proposed to make a trading-voyage down the river a little later in the season. Big Sidórka was also there. He had promised to accompany the Russians to Nuklukahyét, but the threats of the Koyúkuns and the ice in the river had caused him to change his mind. He was now very anxious to go down the Yukon with me, as he had never been below Lófka's barrábora. We boiled our

ducks, and found them all very lean and tough from the scarcity of food. The horsetails (*Equisetæ*), on which they feed, had hardly begun to show themselves above the mud.

Wednesday, June 3d. — As there was little prospect of obtaining a more suitable man farther down the river, I decided to let Sidórka go with us. His Indian name was Yéto, and by that we called him. The brown sandstones on the right bank cease at Kaltág, and below is a long stretch of gravel banks, and then gray sandstones and shales with very poor vegetable remains. At the village near the bluffs below Kaltág there were a few Indians. Here I bought half a dozen martens for a few loads of powder and ball. The wind kept obstinately ahead, and impeded our progress a good deal. We took tea near the mouth of the Káiyuh River. The left bank of the Yukon appears to be generally low, with hills in the distance. The right bank is always the higher, and the river seems to run on the right side of a broad valley, of which the bluffs on the right bank and the distant hills on the left form the boundaries. The vegetation resembles that farther up the river, but here the willows and poplars attain a larger growth. We pitched the tent on the banks of a small creek, where the level dry ground formed an excellent camping-place. There were the remains of many old Indian camps here, and we saw a large number of sand-hill cranes, besides adding to our collection a specimen of the beautiful purple sandpiper.

Thursday, 4th. — I rose very early, and taking my gun, went to a pool near by, where I got a shot at a swan, but failed to bring it down. By patient waiting I finally succeeded in getting a brace of green-winged teal, which are the best eating of any of the water-fowl found on the Yukon. The mosquitoes were abundant here, as the location was warm and sunny, and I soon awoke the Indians by raising a corner of their tent and giving the predaceous insects access to the interior. The sun shone brightly, and the day was most beautiful. We soon pushed off and continued on our way. We passed through a number of sloughs, and stopped at several of the islands to shoot. On many of them small lagoons exist, and on these the water-fowl congregate early in the morning to feed. We obtained quite a number of brant and several ducks. A downy owl (*Brachyotus Cassini*) flew out

from a thicket and, probably impelled by curiosity, followed the boat at a short distance for nearly a mile. The superstitions of the Indians were excited, and they finally shot the bird, which fell in the water and continued to follow us, carried by the current, even in death.

The alder buds were just opening, and the tender leaves began to appear. About ten o'clock, passing through a small pratoka, we saw on a gently rising mound a white Greek cross. This spot, according to Kurílla, was the place where the boat for Nuláto with goods from the Redoubt was once caught by the ice and frozen in. The crew built a house and wintered here. They called it Kwikhtána barrábora or Cold House, from the extreme cold which they suffered. One of them, who died, was buried on

Site of Kwikhtana barrabora.

this mound, where the cross marks his resting-place. Game was scarce, and we were obliged to be economical with our stores. For dinner we boiled three geese and a duck in the big kettle. I usually made away with the duck and a plate of soup, beside tea and sukarée, while the Indians never failed to clean out the kettle, leaving only the bones, which were the dog's perquisite. In the afternoon we crossed the river to a slough which Kurílla said was a short cut; but after going a little way the wind was so

strong and dead ahead that I determined to turn back and go by the main river, where we were sheltered by the high bank. We saw many fresh tracks of the black bear along the muddy shore. Crossing again, we continued along the right bank, which in some places is composed of trachytic rocks of different colors. These do not rise to any great height, and are soft and crumbling. Yellow, red, green, blue, and all transitions from black, through gray, to white were observed. Toward evening we approached the Yakútz-kalátenik River, at the mouth of which is an Indian house in a very dilapidated condition. This is known as Lófka's barrábora. It had a melancholy appearance in the twilight,

Lofka's barrabora

being deserted and falling into ruins. We decided to camp here. As we pulled toward the beach, a large otter started from among the willows and ran along the shore. We had brought along a small canoe made of three boards, and Kurílla hastily jumped into this and made for the beach. He landed, but the otter was too quick for him ; it plunged into the water near the river and disappeared. We put up the tent, boiled the chynik, and retired to rest. The rain, which soon came on, did not disturb us, as every-

thing had been put ashore and covered with the bidarrá before we had turned in.

Friday, 5th. — The rain had ceased about four o'clock in the morning, and it had cleared off finely. A stroll along the banks of the small river revealed many fresh beaver-tracks. The beaver, when forced to leave his house by the spring freshets, which fill it with water, seeks his living along the banks of the small rivers, until the waters subside. He is a gregarious and playful animal, fond of gymnastics for their own sake. When he finds a steep, smooth mud-bank, he usually amuses himself by crawling up and then sliding off into the water, repeating the process many times, apparently enjoying the fun as much as boys do coasting. He is nocturnal in his habits, and very timid. Taking the small canoe, Kurílla paddled patiently up and down, making as little noise as possible, and scanning the water near the banks for the beaver's nose. This is the only part visible, the rest being below the surface. A crack, followed by a shout, told that my old Scotch rifle had done its work, and Kurílla soon appeared in triumph, bearing a small beaver. The flesh of this animal is to most persons disagreeable. A slight odor and flavor which accompany it frequently produce nausea with those unaccustomed to it. I never ate the meat, but the paws and tail I found very good. The former are covered with a black skin, with only a little hair near the junction with the arm or leg; when thoroughly boiled they resemble pigs' feet. The tail is composed of muscular fibre containing a large amount of a peculiarly sweet fat in the interstices. The skin which covers the tail has the appearance of scales, but there are no real scales. The skin readily peels off if scorched in the fire, and the tail, when well boiled, is a delicious morsel. The muscles and inner skin are reduced by boiling to a kind of jelly, and the whole is so rich that one cannot eat much of it. The castoreum, which is used in medicine, is contained in two glands which open near the tail. Their use is not clearly understood, but is probably similar to that of the musk glands in the muskrat and muskdeer. A favorite amusement among the Kutchin Indians consists in taking the humerus in the hands and endeavoring to break it; as it is very short and strong, this requires considerable strength. After skinning the beaver, and stretching the skin on a hoop of green willow, we

pushed off. The wind was, as usual, dead ahead and very strong. Although aided by the current, we had hard work to make headway against it. Blowing against the stream, it raised quite a sea on the broad river, and as our gunwale was only four inches above the water, we found it necessary to keep close in shore. We stopped to rest several times, and arriving near a broad, shallow lagoon, we went ashore, and creeping behind the willows, tried to get a shot at some of the water-fowl which were feeding there. My favorite, of seven guns, was a Scotch rifle, which had been bored out so that it carried shot as well as ball. It was remarkably long in range, and very true. The ball which I used with it was a long conical one, weighing an ounce and a quarter. One of these was quite enough to bring down anything which it hit. Loading with buckshot, I waited for Kurílla, who had gone to the other end of the lagoon, where several swans were gracefully seated in the water. The report of his fowling-piece, which brought down a couple of brant, roused the swans from their reveries; and striking the water with their broad wings, they rose slowly and sailed through the air in single file toward my hiding-place. They are not rapid flyers, and I could count every sweep of their strong white wings. As they followed one another, uttering their harsh cry at intervals, their heads and necks in a straight line, they looked anything but graceful, and would hardly be recognized as the same birds so lately seated on the water. Just before getting in range, they most provokingly changed their course and struck out across the Yukon; so I had my trouble for my pains.

Before returning to the boat I secured a mallard and a white-fronted goose, to which the Indians added several pintails, and seven brant, so that our larder was well supplied. Toward evening we began to look for a camping-place, but everywhere the shore was covered with great blocks of ice, some distance above the water, and we were finally obliged to haul the boat up on a large ice-sheet which was grounded on a sand-bar. Here we camped, and a most uncomfortable camp it was. We had to travel a long distance to obtain driftwood sufficient to make a fire. Sand makes the hardest bed known; fine gravel is much more comfortable. The mosquitoes too, though not abundant, were by no means idle. Everything along the river showed that

it was an unusually late season. Few small birds were seen, and no butterflies as yet. The birch, poplar, and willow had only begun to unfold their leaves, while on the north slope of the hills snow still rested.

Saturday, 6th. — We started early, and pulled against the same strong wind. We landed at a village which was quite deserted, the inhabitants being away after beaver. The facility in carving, shown by the Ingaliks of the Lower Yukon, was well displayed here. Paddles, dishes, and other articles lay scattered about where the owners had left them. The winter houses were half full of water, and the Indians had evidently been living for some time in three large summer houses. Among other things lying about, I noticed a large scoop or shovel shaped like a table-spoon, but seven feet long. It was carved out of one piece of wood, and ornamented with designs in red chalk and charcoal. It was of very graceful shape, and had evidently been used for throwing out the ice from the aperture through which the fish-traps are raised in winter. I noticed a small bowl prettily carved, with two ears or handles. A long stick, to which a block of wood is attached at one end, is used, with the bowl referred to, for grinding up tobacco into snuff. My Indians were anxious to appropriate some of these articles, but I would not allow them to do so in the absence of the owners. The paddles, many of which were seen, were curiously painted with green, red, and black, and were smaller and more pointed than those in use farther up the river. The paddles decrease in size as we go down the river; those at the Yukon-mouth are very small and narrow indeed. We passed a very small waterfall during the day, the first I had seen on the river.

On a small island we saw the first Indians. There were only three or four, and they were much alarmed when they first saw us. We landed, and found that they were making fish-traps. They had nothing to sell except some eggs, and a few úkali, which I bought for the dog. After making them a present of a few leaves of tobacco, we pushed off and continued down the river.

The boat was ill stowed, and a good deal of mud had gathered in her bottom from our feet, so I determined to camp early, turn her over, and wash her thoroughly, after taking out the goods.

KLAN-TI-LIN-TEN.

Nothing rots a bidárrá like mud or dirt inside of it. We camped near a small brook, and Kurílla started off after game, while we attended to the boat. We finished cleaning her and gave her a good oiling before getting supper ready. The three Indians polished the beaver's bones, while I regaled myself on a fat teal roasted on a stick before the fire.

Sunday, 7th. — The day opened fair, but with the same wind, which was soon attended by smart showers of rain. We pulled along shore, and about ten o'clock came to the point where the Russians had located a sort of rapid. It proved to be nothing more than a piece of swift water, running along the base of a range of low conglomerate bluffs, for two or three miles. The river here was quite broad; to the right were successive hills, rising one after another, and fading into purple distance. The left bank was, as usual, low, and a large island divided the river a few miles beyond. Kurílla said that the Indian name of the place was *Klan-ti-lín-tcu*, meaning "rocks and strong water."

The Russians had reported a coal seam here, but the rocks are conglomerate, preceded by trachyte of various colors, and followed by beds of clay, quartzite, and yellow gravel.

I landed to take the annexed sketch, and to examine the rocks. While so doing, an arctic hare scampered by on the edge of the bluff. Kurílla was too quick for her, however, and a shot from my rifle brought her down. I was sorry afterward, when we skinned the animal, to see that the teats were full of milk; for it showed that she had, somewhere, a family of little bunnies, who would suffer and probably die for want of a mother.

We took tea at a small rivulet about noon, and concluded to remain there until the wind fell somewhat. We scoured the small lakes near the river for game, and came back to camp well loaded. About sunset the wind became less violent, and we pushed a little farther down stream, camping about nine o'clock.

Monday, 8th. — As we slowly descended the river, we saw a few Indians on the bank. They appeared to be shy, and indisposed to meet us, but finally one of them put off in his canoe, and extended a bit of paper in the end of a long cleft stick. I took it, and he immediately paddled away as fast as he could. It was a bit of yellow tissue paper, carefully folded. I opened it, and after removing several wrappings I came to a bit of white paper, ap-

parently the blank edge of a newspaper. On this was a rude drawing of a boat, by its side a bottle, and under the drawing, in a straggling hand, was written, "Isaac Koliak."

The meaning was evident. My intelligent Máhlemut friend had crossed the portage from the seaboard to Anvík, not far below on the Yukon, and was going down the Yukon on a trading-voyage. He knew I was coming down the river, and sent this note by one of the river Indians to inform me of his proximity. We passed the northern entrance of the great Shágeluk slough, and continued down the main stream toward Anvík. There were numerous large, well-wooded islands, and the mouth of the slough might easily be overlooked. A little later we saw a camp on the right bank, and, pulling toward it, soon recognized Isaac and his party. They received us with the most lively demonstrations of welcome, and declared their intention of going down the river with us. The party comprised about thirty Máhlemuts, male and female, and their children and dogs. Isaac told me that he had crossed from Kegiktówruk late in the spring, with three large bidarrás on sleds drawn by dogs, and had descended the Anvík River after the ice had broken up. His intention was to descend the Yukon, trading as he went, and to meet the American traders who were expected at St. Michael's in the early summer. The articles which they had brought for trade were principally skin clothing of their own manufacture, needles, tobacco, guns, and ammunition. They proposed to buy furs, and wooden dishes or kantágs, of Indian manufacture. The Innuit are accustomed to make these voyages for the purpose of getting rid of their old guns and

Kantags and wooden ladle.

surplus ammunition, at prices much higher than they pay for new ones to the traders at Grantley Harbor and Kotzebue Sound. The wooden ware is an article of trade with the Innuit of Bering Strait, where wood suitable for the purpose does not grow. I

ANVIK STAREEK.

"One more leaf of tobacco."

took Isaac on board as a passenger, while his party got their boats ready to follow us to Anvík.

We reached the mouth of the Anvík River about noon, and pulled up the stream for a short distance, to the point where the village is situated. Here both sides of the Yukon are rather high. Not far below they become low and flat. The Yukon widens, and here a series of sand-bars exists, which is the first obstruction to navigation as we ascend the river from the sea. These bars change somewhat every year, but a native pilot can find a five-foot channel during the lowest stage of the water in the fall. Anvík is a large village, of some ten or twelve houses, each of which may contain twenty inhabitants. The natives are Ingaliks, but from constant intercourse and close proximity to the Innuit tribes of the coast, they have adopted many of the Innuit customs. Among these, that of wearing labrets is most conspicuous. The language spoken is the true Ingalik, with no intermixture of Innuit words, except such as are used to designate objects which they obtain from the latter in trade, and for which there are no Indian names. A jargon containing a large number of words of both languages is used in trading. This is also used in intercourse with the Russians, who understand something of the Innuit dialects. This fact is a sufficient cause of miscomprehension in regard to the different dialects, and should be borne in mind by philologists. A similar jargon is in use wherever the Indians trade with the coast tribes.

We boiled the chynik, while I examined the village and took notes of points of interest. The chief man of the village had been hired by Isaac to descend the Shágeluk and meet him at the southern entrance; but an old fellow who appeared to have a good deal of influence came forward with two fish, which he proposed to sell for tobacco. The price of a salmon is a leaf of tobacco, on this part of the Yukon. He wanted two leaves apiece, complaining that it was early in the season and fish were scarce, while the leaves were very small! His parka was almost deprived of hair by long use, his breeches were shiny with grease and dirt, which also incrusted his hands and face, while the hair on his aged head, though cut short, stood erect as if in protest against the invasion of so much raw material. He looked so comical, as he stood haggling for a leaf of tobacco, with his

head on one side and his small eyes glistening with excitement, that I gave him the price he asked, and made it square by taking his portrait. Dirt was the prominent characteristic of the village. The year before, we had touched here, and the space in front of the houses was red with thousands of salmon, split and hung up to dry. It was yet too early for the fish this season, and there were many new baskets and nettings lying about, — the material for projected fish-traps. Many of the inhabitants were absent, after beaver. One man brought me ten fine marten, but asked so high a price that I refused to buy them. The Stareék (old man) brought me two marten and some mink, which I bought, but the Máhlemuts had purchased most of the furs. Well armed, bold, and numerous, the latter completely overawed the degraded, fish-eating Indians, and forced them to sell whatever they had, at the purchaser's price.

I noticed that the graves or coffins here, instead of being covered with logs, as farther up the river, were filled in with earth beaten down hard and plastered over with clay. They were larger, rather more elevated, and painted more after the Innuit fashion than those farther up on the Yukon.

I saw quite a number of clay pots and cups of native manufacture here. They were mostly large, holding three or four gallons, but some were smaller, and one was evidently modelled after

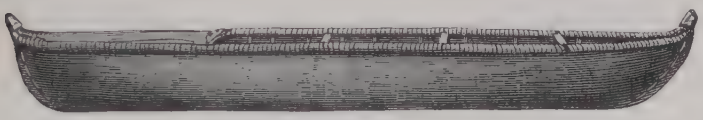
Indian pottery.

a Russian mug. The common Innuit lamp is also made of clay, and all their pottery is rudely ornamented with lines, dots, and crosses. They are about three quarters of an inch thick, of a dark bluish clay, and were perfectly black from smoke and grease. I would have purchased some of them, but they were so large and so exceedingly dirty that I did not care to put them in the boat. This kind of pottery was formerly universal, but has been superseded by the kettles of the traders. The pots are made by hand,

and therefore not perfectly round or symmetrical. They are dried in the sun, then baked, and will stand the fire very well. The Innuit name for the pots is *Átkusik*, for the saucers or lamps *Núnuk*, and for the cups *Ím-owun*.

We left Anvík soon after drinking our tea, with Isaac on board. The wind was so high that we could not cross the river, and rain coming on, we soon camped on a small island. The other boats crossed to the other side, and we lost sight of them. Starting from camp, I saw and killed a large sand-hill crane. These birds are plenty on the Lower Yukon. I have seen thousands of them, but never of any color except brown, gray, and fawn color. White ones are unknown, and I doubt the correctness of the theory which considers the white crane of the Mississippi valley and the sand-hill crane to be one species.

Tuesday, 9th. — The rain ceasing, we passed down the river and entered a long slough or cut-off. Near noon we stopped and took tea. Soon after, we came to an Ingalik camp where they were making birch canoes. The birches of the Lower Ingaliks are very different from those of the Upper Yukon Indians. The



Ingalik birch canoe.

rough waters of the broad river need a stronger canoe than those used by the Kutchin tribes. Everything is carefully carved and smoothed. The frame is stout and strong, and ornamented with red paint. The bark is shaped over a mound of the exact size of the proposed canoe, and sewed with spruce roots. The cut represents the canoe before the gum is placed over the sewing. The paddles are lance-shaped, small and slender, and ornamented with the most fantastic figures, in red, black, and green. I expressed a desire to see the green pigment, and one of the Indians produced some. It was a sort of fungus (*Peziza*) or mould, which penetrates decayed birch wood and colors it a deep blue-green. I bought a small model of a canoe, from which the above figure is drawn. There were seven large canoes nearly finished, and several in process of manufacture. The Ingaliks take fleets of

these new canoes down to the delta in the fall, and trade them to the river Innuit for oil, ivory, boot-soles, and other articles. Isaac expressed a great desire to take one of the little model canoes to his baby, and I bought one for him, to his great delight. We also purchased some fish and berries, and went on our way. We passed a large winter village between two hills, known to the Russians as the Murderer's Village. Crossing the Yukon about three o'clock, we came to the southern entrance of the Shágeluk slough. Ascending a little way, we reached the Leather Village of the Russians. This is a large Ingalik summer village, the inhabitants in winter living at the last-mentioned settlement. Here we saw the cotton tents of the Máhlemut camp near the Indian houses. Isaac's wife stood on the bank, holding the baby, which crowed and exhibited all its infantile joy at seeing its father, who still further delighted this promising member of the family by producing the toy canoe.

We left the boat in the water, and took only our tent, cooking utensils, and blankets ashore, as the number of natives was so great that I thought it the safest way, especially as these Indians have a reputation for stealing. Leaving one man on the watch, I strolled into the village. The amount of food collected here was almost inconceivable. Large stages were groaning beneath the weight of fish, caught and dried the previous season. Long lines were strung with fresh white-fish, drying in the sun. Rows of caches full of dry fish, meat, fat, and skins of oil, showed that hunger need not exist in this favored locality.

The fresh meat of three or four moose, just killed, was lying in one pile; another contained the haunches and shoulders of ten deer. Every few minutes a canoe half full of fresh white-fish would arrive from the fish-traps, and in no part of the Indian country have I ever seen food so plentiful and so easily obtained. I was informed that the natives had quite a trade with those from other places, who came to buy úkali in the winter and spring. The summer houses were large and well built. The walls even of the caches were thick, and in many cases pierced with loop-holes for guns. There were but few dogs about, and I noticed a large white-breasted thrush tied by the leg, and apparently quite tame. I tried to buy the bird, which I had not seen elsewhere, but the owner could not be found. The Indians told me that

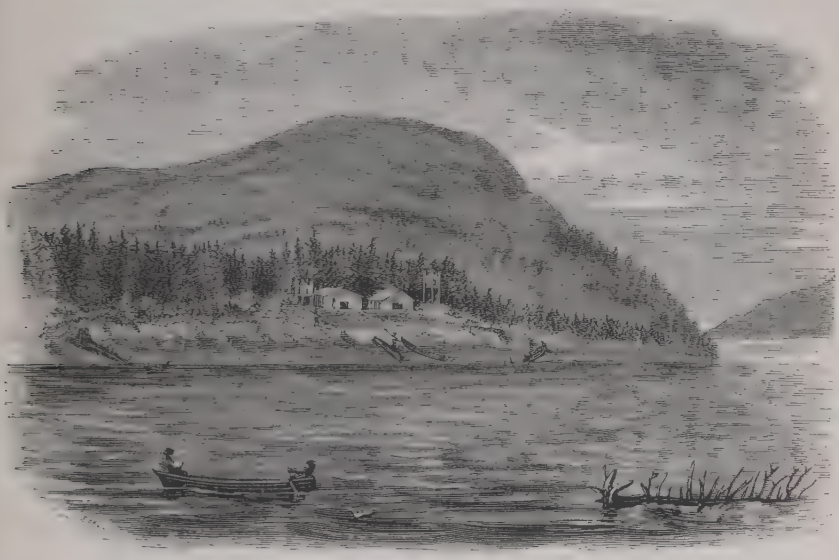
Teleézhik, the old Russian interpreter, had been there the previous day, and was now trading for furs farther up the Shágeluk. I returned to my tent, and bought a lot of fresh meat and some fat. Isaac came up and said that his brother had come with him, and had a little liquor which he had bought of the traders, but not enough to make a "good drunk." "Now," said he, "we want you to sell us your whiskey, and we will pay you well for it, with furs or anything you want." During my absence the rascals had discovered a can of alcoholic specimens in the boat, and supposed it was whiskey. I told him that I wanted it myself, that it was not good to drink, &c., but he went away very sulky. The Máhlemuts, male and female, now dressed themselves in the new fur clothing which they had brought to sell. Old Abraham, Isaac's father, commenced drumming, and the rest soon began one of their characteristic dances. Those who did not dance raised the old "Ung-hi-yah" chorus and kept time, clapping their hands. It was a sight to remember. Ten or fifteen clean, handsome, stalwart Innuit, going through the graceful gesticulations of their national dance, dressed in new and handsomely trimmed parkies of every variety of skin, — with the tall poplars and spruce for a background, a fire on one side, and above the genial twilight of the arctic night. Their wild chorus added to the charm of the scene. Around them in a wide oval were huddled the well-fed but filthy Indians. Their skin clothing was hairless from long use, and while almost dropping off them from decay, glistened with vermin. Degradation, filth, stupidity, fear, and wonder marked their features. The meanest of the Innuit far surpassed the best of them in strength and manliness. Their miserable condition was due in great measure to their sedentary habits, constant fish diet, and natural indolence. Very few had guns at all, and those which they did have were old, worn out, and nearly worthless. The Ingaliks who live farther up the Shágeluk are said to be more intelligent and active, probably because they subsist on the deer and moose which they are obliged to hunt. After the Máhlemuts had concluded their dance they distributed tobacco in small pieces to the bystanders. I repaired to my tent, took supper, and putting the alcohol-can, for safety, into the tent, lay down to rest. I had not got asleep, when I heard something crash against the tent-pins, breaking down two of them. At the

same time, Kurílla shouted to me from outside that the Máhlemuts were after the alcohol. I shouted back to look sharp, as they would not get it while I had a loaded gun. I pulled on my boots, seized my revolver, which lay by my head, and threw back the flap of the tent. There stood a Máhlemut with his hand on the trigger, and the muzzle of his gun about two feet from my breast. At the same moment, Kurílla's long arm jerked the gun from his hands, and flung it far away among the bushes.

I stepped out of the tent, and the Mahlemuts slunk away without a word. They were intoxicated, having drunk the liquor of which Isaac had spoken. The Indians had hidden themselves, while my men, guns in hand, stood near the tent. If the Máhlemuts had been sober, they would not have behaved so. It was a narrow escape, which I hardly realized at the time. The intruders retired to their tents, seeing us armed and ready for anything. The Indians now mustered courage enough to come out, and the chief came to me and begged me, with many bows and deprecatory gestures, to remove my camp, as he was afraid there would be trouble yet. "You know these Innuit are so very bad, so horribly bad, such beasts, worse than dogs," said he, almost with tears in his eyes. No doubt he was thinking of the miserable gun which they had just given him for twenty fine marten skins, which he dared not refuse them. I consulted with Kurílla, and then told the chief that we would move our camp to the island in the middle of the river, and if any one wished to trade meat or fur they would find us there. The tent and other traps were thrown into the boat, and we pulled across a very swift current to the island. Just as we hauled up the boat, Kurílla shot a swan who was sailing slowly overhead, and taking the little canoe, he started down stream after it. Some Indians came over with beaver skins and tails, which I purchased; and I hired one of them to act as sentinel during the night, with a good fire to keep off the mosquitoes. When Kurílla returned we gave our watchman the swan to pick, to keep him awake, and turning in, were soon lost in slumber.

Wednesday, 10*th*. — We pushed out into the rapid current very early in the day, while we saw nothing more of our Innuit friends, who were probably sleeping off their headaches. We pulled hard, hoping to reach the Mission before night. We passed a village

of two houses, called Mankí, interesting principally as being the most inland Innuit village on the Yukon. The difference of stock was apparent only from the countenances of the natives and the dialect which they spoke. The latter exhibited no signs of any mixture of Indian words. It was quite incomprehensible to my men, who had been able to converse freely at the last village. I could understand only a few words, which resembled the Máhlemut, though the grammatical construction was the same as that of the other Innuit dialects. These natives belong to the *Ekógmut* (sometimes called *Kwikhpágmut*) tribe, and are known



First Premorska village.

to the Russians as *Pre-mórski*, or "dwellers near the sea." They extend to the seaboard, on both sides of the river. Their habits in general are similar to those of the coast Innuit already described, but are a little modified by their situation on a river, which presents some conditions which do not obtain on the seashore. They are at peace with the adjacent Indians, probably as much because both are miserable cowards, as from any other reason.

As we sailed down the river, an old fellow in a small bidarrá came out from a river which entered the Yukon from the west,

and brought some cranberries for sale. A great difference is noticeable between the villages on the Upper and those on the Lower Yukon. Below, we find large, solid, permanent houses, gayly painted paddles, and great abundance of skin boats, the prows of which are frequently fashioned to resemble the head of some beast or bird; above, the dwellings are at best miserable huts, tents, or temporary shelters made of brush. Dirt, and a deficiency of the ornamental, mark the upper villages, while the only boats are the frail and carelessly made birch canoes. A little farther on we met a three-holed bidárka with a Creole from the Mission in it. He was going to the small river we had just passed, to try and hire the bidarrá from the natives, for a trip to the Redoubt. He gave us some goose-eggs, and went on his way.

We kept on until eight o'clock in the evening, and finding that we could not reach the Mission within several hours, camped at a native settlement, called by the Russians Loon-cap Village. We pitched our tent near a small brook, and soon had the kettle on the fire. This village presented many points of interest. The number of inhabitants was only eight or ten, the remainder having died. This decrease in population is noteworthy along the Lower Yukon. Everywhere there are fewer natives than formerly. The decrease is partly due to lung diseases, which arise from their habit of drawing the smoke of the Circassian tobacco into the lungs. In this particular village, within a generation, there had been several hundred inhabitants. There were eight large summer houses, in each of which a hundred people might have been comfortably accommodated. These houses were built of immense planks, hewn out of single logs with stone adzes. Many of these planks were four inches thick, and three feet wide by twelve feet long. The houses were in a miserable state of decay. Water stood in some of them, and only one or two were habitable. The rafters were carved into rude imitations of animals, and still retained traces of the red earth with which they had been painted. The graves were the most conspicuous and remarkable part of the village. They exceeded any I have ever seen on the Yukon, in intricacy of ornament, variety of design, and in their number compared with the size of the village. They were on the hillside, a little way above the houses. I noticed that they were not covered with logs or slabs of wood like

the Ingalik graves, nor with earth and clay like those at Anvík, but were filled with earth over the body, and then carefully covered with pieces of birch bark, held down by heavy stones. The supports of the box were immediately underneath it, and large baluster-like standards ornamented the corners. Many of the boxes were carefully fitted, smoothed, and painted with various designs. Some had fur animals depicted on them, showing that the dead person was a successful trapper. Others had the bear, deer, and other animals, denoting the graves to be those of hunters. Fish, birds, pictures of seal and beluga hunting, were painted with the usual red pigment on others. Many were studded with pegs of ivory or bone; some were surrounded by a carefully carved and painted railing. Drums, kantágs, paddles, bows of tremendous size bound with sinew, arrows of bone carved into intricate lace-work, quite different from anything I have seen elsewhere, strings of beads, belts, pieces of brass scratched with patterns, kettles, and other articles of use and ornament were attached to many of the coffins. On posts in front of some of them were separate pieces of wood-carving, such as masks resembling the human face, and trimmed with wolfskin, carved human heads, beavers transfixed with arrows, fish, beluga, and boats with men in them, all variously painted.

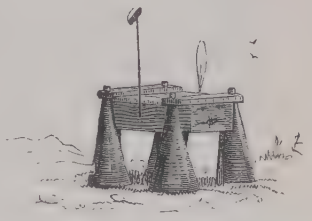
The ethnologist would find a wide field in the vicinity of this village alone. The few inhabitants had a melancholy cast of countenance, as if conscious that they were living among the remains of the ingenuity of their ancestors, which they could not hope to emulate. They were successful in hunting; that very day a bear and three deer were killed, with nothing but arrows, a few rods from the houses. The men wore dresses of birdskins, which are common on the Lower Yukon. Some of them had caps made of the skin of a loon or hawk, with the breast above, the head still attached and hanging down behind, and the wings on either side. The vegetation was luxuriant. I forced my way to the vicinity of the graves through a growth of grass and weeds four feet high. Care was necessary to avoid falling into excavations, the sole remains of ancient winter houses long since rotted away.

I bought some fresh venison, and after a hearty supper we turned in.

Thursday, 11*th*. — After collecting a few plants, among which were the blossoms of black and red currants, we pushed off on our way to the Mission. The trees had already become less abundant, especially on the right bank. The latter was pretty high in many places, and trachytic rocks were observed. In some places the river is exceedingly wide, and once or twice, when we were in the current close to the right bank, the left bank was quite invisible. A broad, smooth sheet of water stretched to the west, undisturbed by any ripples, and not broken by islands or dry sand-bars. The scene strongly impressed upon the observer the majesty of the great river upon which we were travelling. About ten o'clock the basaltic rocks indicated the proximity of the Mission, and hoisting the American flag and that of the Scientific Corps, we rounded a point, and the buildings came into view. The water near the shore was shallow, and we had some difficulty in hauling in our heavily loaded boat. We fired a gun, and were saluted in return by the Russians.

We found that the missionary of the Greek Church in the District of St. Michael's (commonly known to the Russians as the Pope) was on the point of starting for the Redoubt. He had dismantled the church of everything valuable, and had nailed up the door. At his request I took an inventory of the houses and articles of furniture he left behind, as he hoped to sell them to the Americans when they arrived. He then applied for medical advice, and gave a lengthy description of his personal miseries, which were all clearly referrible to an undue indulgence in alcoholic stimulants. This, I believe, in the Greek Church is not considered to detract from the holiness of its ecclesiastics. All of those I have met with in Alaska and Kamchatka were inveterate topers. He told me that he had been seven years a missionary on the Yukon, and that he thanked God that he now had an opportunity of returning to Russia, where a glass of rum might be had for twenty-five kopeks (five cents). I cautioned him against *delirium tremens*, and bade him good by. His Creole servant, who accompanied him to St. Michael's, had a very pretty wife, and I doubted if something more than a fatherly benediction did not lurk in the kiss Father Larriówn gave her just before he embarked.

The other Russians at the Mission were Milavánoff the bidárshik, and Goldsen, who had been acting as secretary. Milavánoff was a good trader, but an invalid from liver complaint, which is common among the Russians in this country. He gave me a good supply of bread, as my own was nearly exhausted, and I made him a present of my Derringer, to which he had taken a fancy. I was sorry to find that I could not get an interpreter here, as the Innuit dialect of the delta was incomprehensible to all of our party. The buildings at the Mission, except a new house of Milavánoff's and one belonging to the Pope, are very rotten and miserable. The place is a very unhealthy one. It is situated between two hills which shelter it completely from the wind. Several pools of stagnant water are close by. The Indian village is very filthy, and their refuse from fish and other matters is everywhere scattered about. I counted six dead dogs among the bushes, and close to the houses there is a large number of graves, both Russian and native. Some of the latter were curious, and were furnished with the baluster-like supports before mentioned.



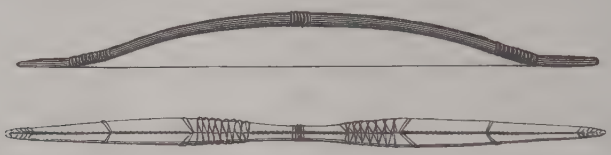
Ekogmut grave.

We emptied our boat, turned her over, gave her a good oiling, and left her to dry. This is imperatively necessary when travelling in skin boats, and should be done at least once in ten days, if possible. We all took a good steam bath, which was a great luxury. Once, farther up the Yukon, I had tried the experiment of bathing in the river, but the water was so cold that only a single plunge was endurable. In this part of the river the water is so muddy that it adds nothing to one's cleanliness to bathe in it.

Friday, 12th. — After securing a number of specimens, grinding our axes, and performing a variety of similar small jobs, we again proceeded on our way. Just below the Mission we saw a native attacking a beaver with one of their bone tridents. Kurílla started to his assistance, in the canoe, with his gun ; after a little while they returned, and I bought the animal, as it lay, for three bunches of Circassian tobacco. We kept on all night, as

the air is cooler than in the day, and there is no darkness, though the sun goes a little below the horizon. No stars were visible all night.

Saturday, 13*th*. — About midnight we rounded the Great Bend. Here we met the head-wind blowing in our teeth with redoubled force. For all the use they had been, so far, we might as well have left the mast and sail at Nuláto. At the Bend we found a camp of natives who were waiting for the wind to subside. They had nothing for sale except a few mink and some eggs. I bought some swan's eggs for scientific purposes, and also a bow of the kind in use in the Yukon delta. These bows are made of spruce, which has little elasticity when dry, and is very liable to break. To remedy this defect the bow is bound with cords twisted from deer sinew, as shown in the annexed figure. This gives it great



Ekogmut bow.

strength, and overcomes the brittleness of the wood. We took tea in a slough, and about noon stopped at a village where the inhabitants were engaged in fishing. It is only by personal inspection of such a village that any one can obtain an adequate idea of the immense quantity of fish which is annually caught and dried on the Lower Yukon. Several acres of ground in front of the summer houses were literally covered with standards and stages bearing line after line of fish, split and hung up to dry. The odor is borne to a great distance by the wind. The dogs, children, and other inhabitants of the village, during the fishing-season, recall the old lines, —

> "Jeshurun he waxèd fat,
> And down his cheeks they hung!"

while the long rows of caches are crammed with provisions for the winter. This condition of things holds good as far as Anvík. Beyond that point the fish are scarcer, and, as previously related, Nuláto is far from furnishing food of any kind in plenty. In the foreground the different parts of fish-traps were lying, in readi-

VILLAGE ON THE LOWER YUKON, DURING THE FISHING SEASON.

ness to repair any damage, or put down a new trap, if the water fell so as to render it necessary. Here some men were emptying the fish out of a basket, and there others were returning with a canoe-load of salmon from some distant zapór.

We bought a few whitefish, and some mink. I saw two red fox cubs with collars, tied to stakes in some of the houses. These were apparently intended to amuse the children. We then departed, and finally camped on a sand-bar which was literally alive with wild fowl. We were now getting into the region where they abound, during the spring and summer, in myriads. The report of a gun will often raise such immense flocks of geese as literally to darken the air; sometimes a flock will be four or five miles long, and two or three rods wide, flying as close together as they can with safety. Swans whitened the surface of several lagoons, and from them down to the tiniest snipe, not weighing more than an ounce, every kind of wild fowl abounded in profusion. Their eggs were scattered over the sand-bars, and a hatful could be obtained on any beach. On attempting to empty the swan's-eggs which I had purchased the day before, by means of a blow-pipe, they resisted all my efforts. On breaking them, what was my surprise at finding that they had been hard boiled by the natives, to keep them from spoiling!

The real work of the season had been well commenced at Nuláto, but partially suspended since we left, as we had procured but few birds new to the collection, since leaving that point. Now I had my hands full, and leaving the task of navigating to Kurílla, I was constantly occupied skinning the birds which we obtained at every turn. I passed many a night without getting an hour's sleep, in order that rare birds might be preserved; and the work of preparing birdskins is anything but a pleasant one. The results to be obtained for natural history were so great, that it was impossible to grudge a moment of time so spent, or to neglect any opportunity of adding to the note-book or the collection.

Sunday, 14*th*. — Passed the Rasbínik village, where I bought a marten-skin and a haunch of reindeer meat. The natives here always cut a small piece off every skin after selling it, for luck as they say. Toward night we reached the village of Starry (old) Kwikhpák. Here I found a man named Yaska, who had been interpreter at Andréaffsky. I explained to him that I wished to

visit the Kúsilvak Slough, and obtain eggs and skins of the beautiful emperor goose (*Chlocphaga canagica*), which breeds in abundance there, and there only. He could not go himself, but obtained a boy who knew the way, and explained to him what I wanted. The village was full of fresh skins of the reindeer fawn. I counted a thousand and seventy-two bunches hanging up to dry. Each bunch contained four skins, or enough to make a parka. This would give a total of nearly four thousand three hundred of these little creatures, which had been killed during the past two months. The village contained a great deal of dry meat and fish, but the inhabitants were squalid and dirty. I saw

Andreaffsky.

a tame owl sitting on one of the rafters, and a few marten-skins were hanging on a cache. I bought an otter-skin of the finest quality, for four bunches of Circassian tobacco. Not wishing to camp in such a dirty place, we proceeded a little way down the river with our guide, and camped.

Monday, 15*th*. — While collecting in the morning, I found cowslips in blossom on the marshes, and obtained the eggs of the beautiful white-winged gull. The long-continued and never-tiring head-wind was stronger than usual this morning. To avoid it, we entered a long slough, where we took tea, and I collected many yellow butterflies (*Pieris venosa* Scud.), the only species

which I noticed on the Yukon near the sea. About one o'clock we emerged from the slough, and at this point killed several geese. The waves were very high, and after an hour's hard pulling we passed the mouth of the Milavánoff River, and finally reached Andréaffsky Fort. It was quite deserted. The solitary fort, with the windows all nailed up, the bare hills, and cloudy sky, made the place seem more lonely and dreary than ever. We hauled up the boat, and boiled the chynik, and rested until the wind should abate a little.

Andréaffsky was built in the form of a square, the buildings making two of the sides, and a stockade the other two. It contained barracks, a store, magazine, cook-house and bath-house. It was erected about the year 1853. In 1855 it was the scene of a mournful tragedy. There was formerly an Ekógmut village near the fort. Several of the natives were workmen at the fort. No trouble had ever occurred. Several of the garrison had gone up to Nuláto with the annual provision-boat, and only the bidárshik and one Russian, besides the native workmen, were left in the fort. One Friday in August, the natives attacked the Russians as they came naked out of the bath, and killed them with clubs and knives. A Creole boy escaped to the hills, and finally crossed the portage to the vicinity of St. Michael's. When he reached that point the Uprovalísha was away, and his secretary, Iván Kogénikoff, was acting in his stead.

The Russians had long murmured at the conduct of the Company, in leaving unavenged the Nuláto massacre. The opportunity of settling accounts with the natives was too tempting to resist. Kogénikoff and Gregory Ivánhoff, with two Creoles, immediately started for the fort. On reaching it they found everything in confusion. The dead bodies lay at the door of the bath-house. The natives, not knowing how to use flour, had merely carried off the sacks. They had also ripped open the beds, and carried away the ticking, while the mass of flour and feathers was left on the floor. After satisfying themselves that there was no living thing in the fort, the Russians started for the village, which was about a mile off. As they approached, Kogénikoff saw a man standing in the door of one of the houses and pointing a gun at the approaching party. It afterward turned out that the gun had no lock; but not knowing this,

the Russians fired, and killed the man. The natives, who were few in number, came rushing out, and were shot down without mercy. The Creoles, who, when aroused, have all the ferocity of the aboriginal savage, attacked the shamán and beat out his brains with clubs. None were spared. The blood shed at the fort was not yet dry, and the infuriated Russians resolved that the authors of that cowardly outrage should be exterminated without mercy. When they stayed their hands the work was done. Fathers, mothers, and children had passed their "evil quarter of an hour." The result was wonderful. From that day to this not a native on the Lower Yukon has lifted his hand against the whites. The bloody lesson was not thrown away. The strong hand, which alone commands the respect of savages, was worth a thousand missionaries. To this day the natives travelling on the river near the fort pass by on the other side. Large quantities of tobacco and other property, stolen from the fort, were found in the village. Around the necks of most of the dead, crosses were found hanging, indicating that the thieves and murderers were baptized converts of the Yukon Mission.

The only articles remaining in the fort at the time of our visit were three six-pounders, and some old iron. Toward evening, though the river was still very rough, we embarked, and by keeping close to the bank managed to travel several miles farther. The white dome of the Kúsilvak mountain loomed up grandly to the southwest. Just south of it is a shallow slough which leads into the south slough of the delta. This is navigable only for bidárkas. The trees were now reduced to low willows, and the level character of the country to the north and west showed that we had passed all the mountains. A few low hills still fringed the right bank, but the general level of the country was only a few feet above the sea. We finally camped on the bank of a small stream, which our guide said was called Egg River. The evening was cold and raw, the sky cloudy and sombre, and the vegetation far less advanced than that a hundred miles inland. Fragments of ice, the remains of huge blocks left by the freshet, still lay on the shore.

Tuesday, 16th. — The whole morning we pulled against a strong steady head-wind. We passed into a narrow slough, and by a turn to the northward were able for the first time to use our

sail. Convinced that we were passing the mouth of the Kúsilvak, we crossed to the other side of the river. Two hours were consumed in doing this, although we made at least three knots and a half an hour. The aspect of the country, flat, marshy, and muddy, was truly desolate. We saw immense numbers of wild fowl in the distance, but no other animals. We camped on the left bank, and I noticed that the mice in winter, crawling along the surface of the snow, had gnawed the bark from the willows full six feet above the ground. This would indicate that the snow falls at least to that depth. A few warblers were building their nests in the thickets, and I noticed the tracks of mink along the muddy beach.

Wednesday, 17th. — Our guide to my astonishment insisted on crossing the river again. As none of us understood the Premórska dialect, we were unable to find out what his intentions were. About noon we stopped at a small island and collected about fifty eggs of the water-hen (*Mergus serrator*). They were laid under logs, without any lining to the nest, and covered carefully with dry leaves and down. The parent birds flew, screaming, round the island, out of gunshot. About half an hour after, our guide brought us to the mouth of the Uphoón! I recognized the place immediately, and by referring to my vocabularies managed to make out that he had supposed this was our destination, and that he knew nothing about the Kúsilvak. This was a great disappointment to me, as I had hoped to obtain large numbers of the eggs and skins of the Emperor goose. However, there was nothing to be done but to make the best of it. I paid him, and he started homeward, while we kept on our way through the Uphoón. The small beaches were plentifully strewn with eggs. The most common were those of Hutchin's goose, the white-winged gull, and the pin-tail duck. I had instructed Kurílla in the manufacture of omelets, and they now formed part of every meal. The egg-shells were carefully emptied with a blowpipe and devoted to science, while the contents went into the frying-pan. We camped on a high bank, which bore the remains of many native camp-fires, and just before turning in I was fortunate enough to shoot a fine specimen of the beautiful red-necked loon. The Uphoón is an excellent collecting ground, but the emperor goose is seldom seen there.

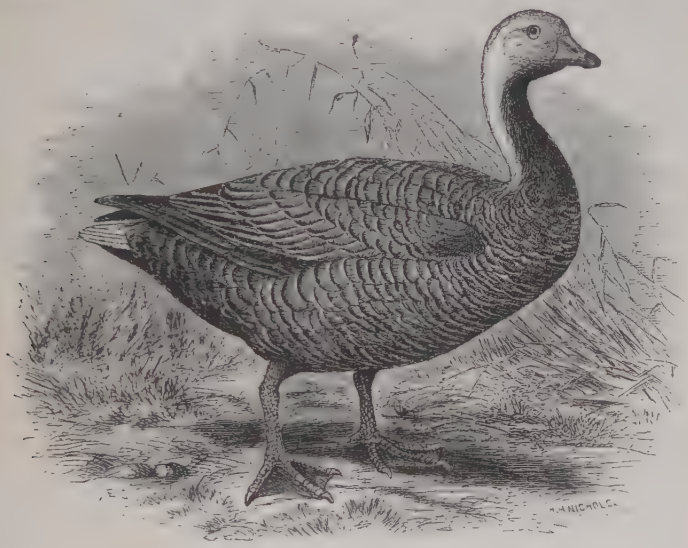
Thursday, 18*th*. — We started late, after unlimited omelet, and rowed slowly through the various windings of the slough. Now and then we stopped to collect eggs or specimens, and the boat was fairly covered with our feathered prizes. We passed one deserted native house, and about dark arrived safely at Kutlík. This settlement consists of one house, built by a Russian called Anányan, containing a living-room, kitchen, and bath-room, under one roof; a single Innuit barrábora stands near it, and a great cache, the largest in the country, has been erected behind the house. The house was entirely empty, and had such a smoky smell that I decided to sleep in the tent, and only to do my bird-

Kutlik.

skinning inside, where there was room to spread out the skins to dry. I proposed to spend several days here, and to send the Indians out shooting, while I kept at work preparing the specimens. Anányan, with his family, was away in the Kúsilvak, where he was salting chowíchee (*Salmo orientalis* Pall.) for Stepánoff.

The next day I busied myself repacking the specimens which had been collected on the road. I sent out all the Indians with liberal supplies of powder and shot, and promised ten balls as a present to whoever should bring in one of the much-desired geese. I blew about five dozen eggs during the day which is an undertaking to be appreciated only by those who have tried it. To-

ward evening it rained, and I moved everything from the tent into the house, except my blankets. The men came back loaded with game, and the indefatigable Kurílla, with an unwonted smile on his sober face, unfolded a piece of cotton and brought out a magnificent old gander of the right sort. The golden tips to the snowy feathers of the head, the beautiful "ashes-of-roses" color of the body, marked with half-moons of black, gave it the undisputed right to its proud title of the Emperor, or, in Russian, *Cæsár-ka.*



The Emperor goose.

The following day and the one after that were spent much in the same way. I was busy preserving and packing the skins, while the Indians were constantly out gunning. Sidórka added another goose to my collection, and I obtained near the house several pairs, and also the eggs of a curlew (*Limosa uropygialis*) not previously found on the American continent. On Monday, Kurílla heated the bath-room, and we all took a steam bath. In the evening about half past eleven that old veteran Teleézhik arrived from the Shágeluk with a boat-load of furs. He would only stop to drink tea, however, and with his two companions pushed on to Pastólik. He had obtained about a thousand martens.

Tuesday, 23d. — After packing up all the collections, I concluded to follow Teleézhik to Pastólik. We arrived there safely, and had hardly landed our cargo before a strong head-wind sprang up, so that we had been just in time. Pastólik is a Únaleet village of some thirty huts, mostly built of turf and driftwood. Just now it was without inhabitants. It is situated on the shore of a wide inlet, into which the Pastólik River empties. The mouth of this inlet is nearly closed by a bar which is almost dry at low tide. Inside of the bar there are deep places, and here a beluga fishery is carried on in the month of August. The beluga is a small white whale, allied to the sperm whale and porpoise. They come into the shallow water to breed, and are prevented from getting out of the inlet by the bar. When the tide falls, the natives in their kyaks attack them with lances, and large numbers are killed. The flesh is eaten, and the blubber and oil preserved for trade and winter use. The length of these animals seldom exceeds fifteen feet, and a large one will weigh about two thousand pounds. I counted eighty skulls lying about the huts, the remains of the fishery of the previous year. The teeth of the beluga are of the consistency of ivory, and are extensively used by the Innuit in making small carvings. Birds, seal, deer, and other animals are imitated with some skill by the natives, and many articles of use and ornament are made by them from ivory. The previous year, on our arrival from Nuláto, I purchased a large number of these articles. An awl or bodkin is here repre-

Ivory bodkin.

sented. The larger articles of ivory are made from walrus tusks, which are obtained by trade with the natives of the northern coast. In July and September a seal fishery, similar to that at Kegiktówruk, is carried on here, and many are secured in nets. These nets are exceedingly strong, and are made from rémni,

Seine needle.

with a peculiar needle, which is here represented. The Innuit

women are extremely expert at this kind of work. I am informed that with similar nets, during the moulting season, they secure large numbers of wild fowl and also many arctic hares in the fall. During the moulting season they obtain many skins of the different species of divers, by driving them into shallow water where they cannot dive, and spearing them with bone tridents. Of these skins they make parkies and other articles of clothing, some of which are very tasteful.

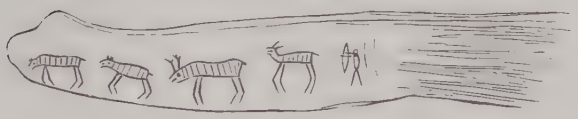
The Innuit have also a custom of making, on flat pieces of bone, rude drawings of animals, hunting parties, and similar things.

INNUIT DRAWINGS ON BONE.

Spearing geese.

Wolves after deer.

Innuit dance.



Deer-hunting.

These drawings are analogous to those discovered in France in the caves of Dordogne, and the preceding sketch of the drawings on either side of two bone knives illustrates their general character. I have seen an ivory bow, used in connection with a drill, and made of an entire walrus tusk, which had depicted on each of the four sides every pursuit followed by the Innuit from birth to interment. These facts have a peculiar interest as showing some similarity between the customs of the present Orarian tribes

and those of the ancient European cave-dwellers. Similar drawings are common everywhere among the Innuit, while I have never seen among the Tinneh tribes of the northwest any similar specimens of art. Some of the Innuit tribes to the southward exhibit much more ingenuity in such matters than those of Norton Sound and the vicinity.

Back of Pastólik are extensive marshes bounded by the low range of the Pastólik Hills, while at their foot the Pastoliák River flows, emptying into Pástol Bay. These marshes are the favorite haunts of myriads of wild fowl.

Wednesday, 24th. — This morning an unexpected misfortune occurred. The strong west wind raised the water so high that it not only invaded our tent near the shore, but surrounded the boxes of birdskins before we became aware of it, and I was obliged to empty them, unpack every individual specimen, and dry it in the sun. This was fortunately accomplished and the specimens repacked, when clouds came up and it began to rain. From the marshes my Indians obtained many fine birds and eggs, including several specimens of the exquisite Sabine's gull (*Xema Sabinii*), and a pair of Emperor geese. This is nearly the most northern point reached by the latter species.

A solitary native arrived in a kyak at night, and reported others on the way. I picked up near the village a large portion of the skull of the extinct elephant (*Elephas primigenius*). These bones are not so common as the teeth and tusks, being found on the surface only, and usually much decayed; while the bones of the musk-ox and fossil buffalo found in the same situations are much better preserved, and sometimes retain some of the animal matter in the bone. The natives have no tradition of any other large animal than the reindeer and moose, and regard the elephant and musk-ox bones as the remains of dead "devils." The tusks are not so well preserved as those found in Siberia, which are usually buried in the earth. The former are blackened, split, and weathered, and contain little ivory in a state fit for use, though the Innuit of the Arctic coast occasionally find them in such preservation that they make kantágs or dishes of the ivory, according to Simpson.

On Friday, Goldsen arrived in a three-holed bidárka with his son and an Innuit lad. He reported that Milavánoff was at Kútlik.

Saturday, 27th. — The wind being nearly fair, all hands loaded up, and we started for the Redoubt. I had hoped to get a larger boat at Pastólik, fearing to trust my little bidarrá to the waves of the open sea, but there were neither boats nor natives at hand. We sailed well, and soon outstripped Teleézhik, though the nimble bidárka led the fleet. We drank tea on the shore, about ten miles from Pastólik, and then pushed on toward Point Románoff. Goldsen arrived at this point some time ahead of us, as it had become quite calm.

On reaching the village, near the solitary hill which marks the point (which is the Cape Shallow Water of Cook), I was about to land, when Goldsen cried out to me, "Hurry up! Mr. Doctor, don't stop for a moment, there are two American vessels at the Redoubt!" My joy and excitement can hardly be described. Our ignorance of any details only added to it. The news was obtained through a native who had been to the Canal, and had only seen the vessels. I immediately proposed to Goldsen to put his native into the bidarrá, while one of my Indians would take the other paddle, and I would accompany him in the swifter bidárka to the Redoubt. This arrangement was soon completed, and I left Kurílla to bring the bidarrá to St. Michael's. We touched at Pikmiktálik, and entering the Canal took tea on the bank. While the chynik was boiling I took a bath in one of the lagoons, and otherwise prepared myself to meet civilized beings once more. After tea we pulled vigorously all night.

Sunday, 28th. — About three o'clock in the morning we reached the northern mouth of the Canal, and saw a small schooner lying in the bay. To the eastward a bidarrá was pulling for the Canal, but seemed rather to avoid us. Taking Goldsen's glass, I made out one white man in it, and the round sides of two barrels rose conspicuously above the gunwale. I felt sick as I sat down, knowing that the cargo must consist of rum, and seeing already the beginning of evils whose future growth none could estimate.

We pulled up to the landing near the boat-house. Everything seemed much as usual, and everybody was evidently asleep. My eye soon fell on a pile of boxes, which were not of Russian make, and just beyond was a lot of American tin cups. I hastened to the house on the point, which was evidently occupied. Entering, I nearly stumbled over a sleeper on the floor. He rose and came

out into the light, and I was soon shaking hands and exchanging hurried interrogatories with Mike Lebarge. The unmixed delight with which I welcomed his familiar face can hardly be appreciated. I found, to my own astonishment, that speaking English, after a year of nothing but Russian and Indian dialects, was anything but easy, and for several days I was obliged to resort to Russian when fluency was required. The news, much of it eighteen months old, was all news to me, and it was weeks before I gained anything like a comprehension of the events which had occurred in the civilized world since I last heard from it. My only disappointment was that they brought me not a single home letter. All of these had been sent to Sitka or elsewhere, in ignorance of my whereabouts. I had not heard from home for nearly two years.

Captain Smith had left with his vessel for Grantley Harbor. He would return to St. Michael's, and I made the necessary preparations for accompanying him to California. I must pass over the events of the next month at the Redoubt. Several trading companies, beside that which Mike represented, intended to send parties into the country. The vessel in the bay was principally loaded with liquor, which had in some mysterious way eluded the vigilance of the United States officials at Sitka ; she belonged to one of these companies. Some time after, the vessel arrived which had been sent to take back those Russians who desired to return to Russia. Very few went in her, as most of them were hired by the new trading companies. To Mr. George R. Adams, and Captain Riedell, of the brig Constantine, I was under many obligations. On the 21st of July the schooner Frances L. Steele arrived from Bering Strait with Captain Smith on board. On the 9th of August, having shipped the collections, I embarked for San Francisco *via* the Aleutian Islands. We touched at St. George's Island and some of the Aleutians on our way to California.

The incidents of the voyage need not be recounted here. It is sufficient to say that I obtained abundance of evidence that during 1868 great abuses were prevalent in the new territory. One trading company in particular, hoping, by its large capital and connection with the officers of the defunct Russian Company, to crush all smaller concerns, had not hesitated at force, fraud, and corruption, to attain these ends. It would be impossible to

believe in the probity of some of the officials (since removed) at Sitka, as it was impossible to avoid seeing the outrages which had been committed. One instance of the temper of these traders will suffice. A party, consisting of several German Jews, one Russian, and some other foreigners, had staked out the places where the fur seal come up on the island of St. George, and declared their intention of holding these tracts of beach under the homestead laws (!) by force, if necessary. Two unarmed Americans, who had served in the army and navy during the late war, and who had a permit to seal from the Sitka authorities, having trespassed on the land staked out, were set upon by a party of armed natives, led by a member of the company referred to, were tied hand and foot, and left all night in a mud hovel used for storing salt. The next day they were released on condition that the trespass should not be repeated.

In their present condition the Creoles are unfit to exercise the franchise, as American citizens. If a territorial government should be granted to the handful of Americans now resident in the territory, it would simply give the stronger companies the power to crush and ruin the weaker ones, and a full opportunity of smuggling and selling liquor would be afforded to the former. The present system of a military government, with honest officers, is unquestionably the best, until the proper reservations are made and regulations in regard to trading are enacted. The territory is not likely to be populous for many years, and should rather be regarded as a great storehouse of fish, timber, and fur; from which American citizens alone should be allowed to draw supplies, under proper restrictions and on payment of reasonable taxes. The country, under a monopoly, afforded one hundred thousand silver rubles a year, taxes, to the Russian crown, and, with the development of other resources than the traffic in furs, can certainly afford as much to the United States. I speak from no uncertainty, but from positive knowledge; I believe that a proper and not onerous system of taxation would afford two hundred and fifty thousand dollars in gold per annum.

It is but reasonable to suppose that a territory separated by sea and foreign territory from the United States — being in point of fact a *colony* — should need, and be the subject of, special legislation, differing in many particulars from that applied to territories

which are merely continuations of densely populated districts under State jurisdiction.

I have seen with surprise and regret that men whose forefathers wielded the axe in the forests of Maine, or gathered scanty crops on the granite hillsides of Massachusetts, have seen fit to throw contempt and derision on the acquisition of a great territory naturally far richer than that in which they themselves originated, principally on the ground that it is a "cold" country. This complaint is but half true to begin with, since on half of the coast of the new territory the thermometer has never been known to fall below zero. Icebergs are unknown in Alaska from Dixon's Entrance to Bering Strait, and no polar bear ever came within a thousand miles of Sitka. On the other hand, has the race of hardy pioneers died out among us? Do we, as a nation, sigh only for indolent siestas in the canebrakes of Cuba? In a country where all that we honor and respect has grown from the efforts of those whose energy, fostered by conflict with the elements, has made a garden of the rock, turned the forest into fruitful fields, and drawn the precious minerals from the flinty bosom of the earth, there can be but one answer to such a question.

We have bought for a nominal price the key to the North Pacific. It can no longer be said that three ironclads can blockade our entire western coast. Two hundred and fifty years hence there may be a new New England where there is now a trackless forest. The time may come when we shall call on our Pacific fishermen to man our fleets, on the lumbermen of Alaska and our hardy northern trappers to don the blue, and strike another blow for unity and freedom. The oak must weather the storms of many winters before it gains maturity. Alaska is not a California, where cities arise in a night, and may pass away in a day. Meanwhile we must be patient.

We entered the Golden Gate on the 29th of September. I cannot close this partial record of my experience in the north, without a word of acknowledgment to those Californian friends who made my welcome back so warm. The friendship of Californians, easily acquired, is as precious as their own gold, and as enduring as their Sierras. When I stepped on board the steamer, eastward bound, I felt almost as if I were leaving rather than approaching home.

PART II.

GEOGRAPHY HISTORY, INHABITANTS, AND RESOURCES OF ALASKA.

CHAPTER I.

General geographical and topographical description of Alaska. — Adjacent seas. — Groups of islands. — Coasts and harbors. — River system. — Ocean currents. — Mountain chains and peaks. — Area. — Earlier maps. — Review of some recent maps. — The authorities for the present map. — Field for future explorations.

THE United States territory known by the name of Alaska is bounded, in general terms, by the Frozen or Arctic Ocean on the north, the Pacific Ocean, Bering Sea and Strait on the west and south, and the Hudson Bay territory on the east. The exact boundaries as laid down in the treaty of cession, and proclaimed June 20, 1867, are as follows: —

"Commencing from the southernmost point of the island known as Prince of Wales' Island, which point lies in the parallel of 54° 40′ north latitude, and between the 131st and the 133d degree of west longitude (meridian of Greenwich), the said line shall ascend to the north along the channel called Portland Channel, as far as the point of the continent where it strikes the 56th degree of north latitude; from this last-mentioned point the line of demarcation shall follow the summit of the mountains situated parallel to the coast as far as the point of intersection of the 141st degree of west longitude (of the same meridian); and finally, from the said point of intersection, the said meridian line of the 141st degree, in its prolongation as far as the Frozen Ocean.

"With reference to the line of demarcation laid down in the preceding article, it is understood, —

"1st. That the island called Prince of Wales' Island, shall belong wholly . . . . to the United States.

"2d. That whenever the summit of the mountains, which extend in a direction parallel to the coast, from the 56th degree of north latitude to the point of intersection of the 141st degree of west longitude, shall prove to be at the distance of more than ten marine leagues from the ocean, the limit between the British possessions . . . . and the possessions ceded by this convention shall be formed by a line parallel to the

winding of the coast, and which shall never exceed the distance of ten marine leagues* therefrom.

"The western limit, within which the territories and dominion conveyed are contained, passes through a point in Behring's Straits on the parallel of 65° 30′ north latitude, at its intersection by the meridian which passes midway between the island of Krusenstern, or Ignalook, and the island of Ratmanoff, or Nunarbook, and proceeds due north without limitation, into the same Frozen Ocean.

"The same western limit, beginning at the same initial point, proceeds thence in a course nearly southwest, through Behring's Straits and Behring's Sea, so as to pass midway between the northwest point of the island of St. Lawrence, and the southeast point of Cape Choukotski, to the meridian of 172° west longitude, thence, from the intersection of that meridian, in a southwesterly direction, so as to pass midway between the island of Attou, and the Copper Island of the Komandorski couplet or group in the North Pacific Ocean, to the meridian of 193° west longitude, so as to include in the territory conveyed the whole of the Aleutian Islands east of that meridian."

Adjacent Seas. — The most extensive of the adjacent seas is the *North Pacific Ocean.* The dividing-line between it and Bering Sea may be said to be the chain of the Catherina Archipelago, from the most western point of Aliáska Peninsula to Cape Kamchatka. That great extent of water lying north of lat. 56°, between the Kadiák group and the Alexander Archipelago, has been named by the Superintendent of the Coast Survey the *Gulf of Alaska.*

Bering Sea extends between Kamchatka and Eastern Siberia on the west, and America on the east; from the Aleutian Islands to Bering Strait. It has two principal eastward prolongations, — Bristol Bay and Norton Sound; and two to the west, — Anádyr Gulf and the Gulf of Kamchatka. Passing through Bering Strait, which separates Asia and America, we come into the Frozen Sea or *Arctic Ocean.* Here the coasts are even and uniform, and the only arm of this sea which is of any size is Kotzebue Sound, northeast of Bering Strait. The northern portion of this ocean is as yet unexplored.

Groups of Islands. — The North Pacific rivals its southern portion in the size of its archipelagoes. The magnificent group of eleven hundred islands, which guards the American coast from

* That is to say, 30 geographical miles, or about $34\frac{75}{100}$ English statute miles.

Dixon Entrance in 54° 40′ to Cross Sound in lat. 58° 25′ N., has received the name of the *Alexander Archipelago* from the United States Coast Survey, in honor of the Emperor of Russia.

The islands southeast of the peninsula of Aliáska, between lon. 151° and 158° W., are known as the *Kadiák Archipelago*, from the name of the principal island.

The great chain of islands from lon. 158° to 195° W. was appropriately named by Forster in 1786 the *Catherina Archipelago*, in honor of the enlightened and liberal Empress Catherine II. of Russia.

The most westerly of the groups included in this archipelago is that known as the *Komandórski* or *Commander's Islands*, from Commander Bering, who died upon one of them. Their situation is about lat. 55° N. and lon. 193° W. They are two in number. The largest is known as *Bering Island*, and the smaller and more eastern as Copper (*Médni*) Island.

The chain between lon. 163° and 188° W. bears the general name of the *Aleutian Islands*, from the term Aleuts, applied by the Russians to their original inhabitants. They are divided into several groups. Those west of lon. 185° W. are called the Nearer (*Blízhni*) Islands. They comprise *Attú*, which is the largest, *Agattú*, or the Crooked (*Krúgli*) Island, and three small islets known as the *Semíchi*, from *Sémik*, the feast on the seventh Thursday after Easter, on which day they were discovered.

The group next east of the Nearer Islands, between lon. 185 and 180° W., is known as the Rat (*Kreésí*) Islands. They are about fifteen in number, large and small. The most important are *Boulder*, Big and Little Gut (*Kreéska*) Islands, Little Net (*Seetkin*) Island, Rat (*Kreésa*) Island, *Amchítka Island*, and the Island of Seven Peaks (*Sémisopóchnoi*).

The next group, from lon. 180° to 172° W., bears the name of the *Andreánofski Islands*, after Andreánoff, their discoverer. There are about thirty of them. The largest is *Átka*, and, in the order of their size, *Adákh*, *Tánaga*, *Kánaga*, *Ámlia*, *Séguam*, *Sítkin*, or Great Net Island, Burnt (*Góreloi*) Island, *Tánara*, *Tagaláxa*, *Yúlak*, *Unálga*, *Amátignak*, and *Kaválay*. The last four, with a number of small islets, are sometimes called the *Délaroff Islands*, from their discoverer. With Burnt Island they are separated from

the rest of the group by the *Tánaga Pass*. Between Ámlia and Séguam is situated the rocky and dangerous *Séguam Pass*.

Between *Amúkhta Pass* (lon. 172° W.) and *False* or *Isanótski Pass* (lon. 163° 20′ W.) lie the Fox (*Lcésí*) Islands. This is the largest of the four Aleutian groups. It contains thirty-one islands, more or less, including the largest in the Catherina Archipelago. The principal are, in order of size, *Únimak, Unaláshka, Úmnak, Akután, Akhún, Yunáska, Amúkhta, Chugíngan, Kugálga, Tigálda, Avatának, Úkamak,* Uliálga, Spcérkin*, and the celebrated volcano islands of St. John the Theologian (*Joanna Bogoslóva*) and the *Four Craters*. Between Únimak and Akhún is the *Únimak Pass*, the best passage for vessels bound for Bering Sea.

East of Únimak, the southern coast of Aliáska is liberally fringed with islands. A group comprising *Únga, Nagái, Niúniak, Tiákinak*, and a number of others unnamed on the Russian chart, is called the *Shúmagin Islands*, from the name of a sailor of Bering's expedition, who died and was buried there.

The *Kadiák Archipelago* consists of *Kadiák, Afognák, Túgidak, Sítkinak*, Marmot (*Ivráskie*) Island, Spruce (*Yelówy*) Island, Woody (*Lésnoi*) Island, *Chírikoff* (or *Úkamok*) *Island*, named after its discoverer, and many smaller islands. A small group northwest of Chírikoff Island is known as the *Sémidi Islands*; another in the mouth of Cook's Inlet, as the Barren (*Bezplódnoi*) Islands; northeast of these, a group of three is called the *Chugatz Islands*.†

The Alexander Archipelago will be described in connection with that part of the coast.

In Bering Sea (lat. 57° N., lon. 169° 30′ W.) we find the *Príbyloff Islands*, so named after their discoverer. They comprise four small islands: *St. Paul, St. George*, Walrus (*Morzhówi*), and Beaver (*Bobrówi*) Island. These are the fur-seal islands. North of the Príbyloff Islands (lat. 60° 30′ N. and lon. 173° W.) is situated the *St. Matthew* group, containing *St. Matthew, Pinnacle*, and *Hall* islands. These are uninhabited, rocky, and precipitous. It is said that a few Russians, left here by the Company to collect sealskins during the winter of 1816, all died of starvation. On

* In the mouth of Únimak Pass. Usually but incorrectly placed on the charts as Ougamok. *Úkamok* is one name for Chírikoff Island of the Kadiák Archipelago.

† Not to be confounded with the islands which throng Chugách Gulf, or Prince William Sound.

the other hand, the whalers assert that St. Matthew is full of white bears, and call it, for that reason, *Bear Island*. St. Matthew is on the line which marks the southern limit of floating ice in large fields. Small quantities may be found south of it, but not so as to endanger navigation, even in mid-winter. This ice line extends from Cape St. Thaddeus, on the coast of Kamchatka, to the St. Matthew group, and in a southeast direction, finally touching the northern shores of Bristol Bay. A little to the south of east of the last group, separated from the continent by *Étolin Strait*, is the large and unexplored island of *Núnivak*. In lon. 170° W. and lat. 63° 30′ N. is situated the large island of *St. Lawrence*. The latitude which Bering gives for the island which he so named (64° 30′) has raised a doubt as to its identity with the one which we call St. Lawrence. It is the Anderson Island of Cook, and as it is mostly low, with a number of prominent hills, it was supposed by the early discoverers, who saw it in thick weather, to be a group of several islands. There is a small cluster of rocks close in, south of the east cape (which has been called *Cape Anderson*), known as the *Pinik Islands*. St. Lawrence is known to the Tuski as *Iwórien*. There is a large island in the head of the Gulf of Kamchatka, which the Russians call *Karagínski Island*, from its discoverer, Káragin. There are also a few small islands to the northeast of it.

In Bering Strait (lat. 63° 58′ 30″ N., lon. 167° 58′ W.) is a small inhabited island, called *Úkivok* by the natives, generally charted as *King Island*. It rises about six hundred feet above the sea.

The Diomedes are two small islands in the middle of Bering Strait. Between them passes the boundary line between Russian and American territory. The Russian island is called *Ratmánoff* or *Imáklit*, and the American goes by the name of *Krúsenstern* or *Ingáliuk*.

A few miles southward lies the *Fairway Rock*, in lat. 65° 38′ 42″ N. and lon. 168° 43° 42″ W. All these islets are inhabited, and the natives are known as Okee-ógmuts.

In the Arctic Ocean, recent discoveries by American whalers show the existence of an island or large extent of land, of which the west cape (lat. 70° 46′ N. and lon. 178° 30′ W.) has received the name of *Cape Thomas*, and the southeast point (lat. 70° 40′ and lon. 178° 51′ W.) that of *Cape Hawaii*, from the discov-

erer, Captain Long of the bark Nile. Captain Raynor found the southeast extremity to be in lon. 176° 40′ W., and Captain Bliven of the Nautilus traced the land as far north as lat. 72° N. without observing its northward termination. This discovery is elsewhere spoken of at length, and has appropriately received the name of *Wrangell Land*. To the eastward, Captain Kellett, R. N., discovered an island in lat. 71° 20′ N. and lon. 175° 16′ W., which he landed upon and called *Herald Island*. Another island was reported to have been seen by him August 17, 1849, and was called *Plover Island*. The latter has not since been confirmed. Captain Raynor reports another island in lat. 70° N., to the eastward of Herald Island, and bearing W.N.W. from Point Barrow. A fertile field for discovery is here laid open for American explorers.

Coasts and Harbors.— It would be out of place, and will not here be attempted, to give a minute description of the labyrinth of bays, channels, sounds, and straits which are found in the Alexander Archipelago. The briefest enumeration possible of the principal points of interest is all that belongs here. For more minute inquiry the investigator is referred to the charts of Tébenkoff and Vancouver, to the works of the latter, and those of Cook and Meares. All that most readers will care to know will be found in the "Coast Pilot of Alaska," recently published by the Coast Survey, and with it much other detailed information derived from the works of the older navigators.

The *Great Archipelago* of Meares extends from the head of Puget Sound to the head of Lynn Channel and Cross Sound. That part of it which has received the name of the Alexander Archipelago lies north of Dixon Entrance (lat. 54° 40′ N.), which separates the British and American islands. But a few of the eleven hundred islands will be mentioned here. Among those distinguished for their size are those of *Baránoff*, *Prince of Wales*, *Revílla Gigédo*, *Admiralty*, *Chíchagoff*, *Kupriánoff*, *Kou* or *Koú-i-u*, *Etólin*, and *Zarémba*.

The principal channels by which they are divided are *Chatham*, *Peril*, *Icy*, and *Clarence* straits; *Cross*, *Christian*, and *Frederick* sounds; *Lynn Channel*, and *Stephen's Pass*. The smaller arms which diverge in every direction from these are innumerable, and afford access to every portion of the archipelago without setting

foot on land. These are far from being explored as yet, and Mr. Davidson says, "There is not even a small map of any part of the coast, or of any harbor, which can be counted as worth more than a reconnoissance or preliminary survey."

The first anchorage in the southeast part of Alaska is *Tayakhónsiti Harbor.* This is situated in lat. 54° 46′ N. and lon. 130° 35′ W., and contains a village of the Tóngas Indians. Here, in 1867, the United States military post of Fort Tóngas was established. It is about ten miles northwest of Fort Simpson. In clearing the timber for this post, it is reported that yellow cedar trees eight feet in diameter were cut down. The flanks of all the islands of this archipelago bear a magnificent growth of the finest timber, from the water's edge to fifteen hundred feet above the sea. The two most prominent capes which put out into Dixon Entrance from the American islands are *Cape Muzón,* or more properly *Kygáni,* and *Cape Chacón.*

The first anchorage in Clarence Sound is *Port Gardner,* in lat. 54° 49′ N. and lon. 131° 45′ W. An anchorage near the entrance of *Kazárn Bay* (lat. 55° 27′ and lon. 132° 01′) is reported good and easy of access. A Russian established a salmon fishery here in 1868. The timber is said to be very abundant and of good quality.

On the northwest part of *Wrangell Island* in lat. 56° 31′ 30″ and lon. 132° 23′ 30″ is situated *Etolin Harbor.* Here the Russians formerly had a stockaded trading-post, called *St. Dionysius.* Here the United States post Fort Wrangell is situated. The harbor is good; coal and abundance of timber is reported. To the east of Dixon Entrance, with a general northerly direction, lies the *Portland Canal,* chiefly interesting as being throughout its extent the dividing line between British and American territory. Near its southern termination is the mouth of *Observatory Canal.* Here, on a point of land west of the mouth of the Nasse River, the Hudson Bay Company established a factory in 1835. This vicinity is renowned for the incredible amount of fish which visit it at certain seasons. By striking a lath, armed with three pointed nails, upon the surface of the water as if raking, an Indian will fill his canoe with herring in twenty minutes, during their season. At the junction of the eastern part of Dixon Sound with the northern part of Chatham Sound lies *Port Simpson.* Here, on

Chim-shyán Island, is a large village of Indians of the same name, and the stockaded Hudson Bay post of *Fort Simpson*. This, according to Mr. Davidson, is the most important British post in this section of the English possessions. It consists of a stockade two hundred by one hundred and sixty feet, with bastions at two of the angles. Inside are dwellings for the traders and their families, storehouses, a kitchen, and a magazine for the furs. The houses show many marks of rifle-balls directed by hostile Indians at the fort, and at each other.

The country around the fort is not high. It has been cleared of timber for half a mile around, and there are vegetable gardens in the rear of the stockade, where root crops mature well. The latitude is estimated at 54° 33′ 35″ N. and the longitude at 130° 22′ 49″ W.

The southern mouth of the Stikíne River opens into *Stikíne Strait* about lat. 56° 41′ N. and lon. 132° 22′ W. A smaller mouth enters Frederick Strait or Sound about lat. 56° 48′ N. This river closes in December, and opens early in May. In lat. 56° 46′ N. and lon. 132° 45′ 30″ W. is situated *Kygáni Harbor*, opening upon *Cordova Bay*.

In lat. 57° 06′ N., lon. 132° 54′ W., is situated the first large glacier seen in the Alexander Archipelago as we approach from the south. In the winter of 1853 – 54 one of the California ice-ships loaded with ice from this glacier.

The extreme southwest point of Alaska Territory is Cape Kygáni, situated about lat. 54° 42′ N. and lon. 132° 43′ 48″ W. The northwest point of Queen Charlotte's Island bears south 39° W. about twenty-eight miles.

On the western shore of Chatham Strait, in lat. 57° 51′, lon. 134° 57′ W., lies *Pávloff Harbor*. The shores are reported to be covered with a very dense growth of timber.

Icy Strait connects Chatham Strait with the ocean, and was so named by Vancouver on account of the masses of floating ice from the glaciers which are encountered there. From abreast of a point known as *Seduction Tongue*, a magnificent glacier, which has been named the *Davidson Glacier*, enters Chatham Strait in lat. 59° 07′ N.

The mouth of the Chilkáht River enters Lynn Channel in lat. 59° 13′. In Frederick Strait, lat. 56° 55′ 30″, is *Saginaw Bay*, so

named from the United States vessel which entered it in 1868. The longitude of the Indian village here is about 134° W. Fish are said to abound here. Northeast of *Point Cornwallis* is *Kake Strait*, so named from the Indians which inhabit it. Its northeast entrance is in lat. 57° N., lon. 133° 56′ W. In *Hamilton Harbor* on the east shore (lat. 56° 52′ N., lon. 133° 34′ W.), Vancouver found the remains of eight Indian villages. Coal has been reported here.

Vancouver says the land between Kake Strait and the main "produces a noble forest of large and stately pine-trees," and the shores are in general low and apparently fit for cultivation if cleared of wood.

Glacier Arm opens from *Stephen's Strait* about lat. 58° 12′ and lon. 134° 13′ W. It is really the outlet of a small river called the Táku, which has been confounded with the Táhco River of the interior. The shores are high, and the ravines full of glaciers. In 1840 the Hudson Bay Company established a stockaded post at the mouth of the river, with bastions, and garrisoned with twenty-two men. Deer are very abundant here; in 1842 twelve hundred skins were obtained. The mountain sheep and goat also abound. The trading-post is situated in a snug, well-protected harbor, opening by a narrow entrance into Stephen's Passage.

Between *Point Woodhouse* and *Cape Edgecumbe* lies the entrance to *Sitka Sound*.

Sitka Harbor is very contracted, and contains two anchorages, the eastern and western. Numerous buoys have been laid down by the Russian American Company, to which vessels usually moor. The eastern is recommended as the best by the officers of the Coast Survey.

The geographical position of the Coast Survey Station between the United States barracks and the church is in lat. 57° 02′ 52″ N. and lon. 135° 17′ 45″ W. The variation of the compass was 28° 49′ E. in August, 1867. The mean rise and fall of the tide is stated to be 7.8 feet, and spring tides 11.9. The highest range was 13 and the least 2.1 feet.

About nine miles south of Sitka are the *Rapids*, which connect the waters of Deep (*Glubókoi*) Lake with Lake (*Óserski*) Bay. At these rapids, according to Golovín, are the salmon fisheries of the

Russian American Company. There is a fall of nine feet, where weirs are constructed, and great quantities are caught. These fish were given away to all who needed food, and the surplus over this consumption amounted to five or six hundred barrels.

In January, 1867, the town and post of New Archangel (now usually called Sitka, from the Indian name of the bay on which it is situated) contained nine hundred and sixty-eight inhabitants, of whom three hundred and forty-nine were Russians, and the remainder Aleuts or Creoles. Few of the Russians now remain; the closing up of the affairs of the Russian American Company having deprived them of the means of obtaining a livelihood, nearly all have returned to Siberia or Russia.

Cape Edgecumbe, at the entrance of the Sound, is well marked by the extinct volcano of *Mount Edgecumbe.* This was discovered and named *Mount San Jacinto* by Bodega in 1775. The top, which is the rim of a great crater, is nearly level, and, according to Coast Survey measurements, attains a height of 2,855 feet above the sea. It has a most remarkable appearance from the Sound. The lower flanks are covered with a dense forest, but the upper portion is quite bare, and in winter snow-covered and distinguished by deep ravines, which radiate regularly from the summit. No other mountain on the coast has such an appearance. It is situated upon *Krúzoff Island.*

Back of the town of Sitka, which is on Baránoff Island, are two mountains. The nearer one is rounded and covered with trees, and the sharp snowy peak of *Vostóvia* immediately behind it gives the appearance of a single mountain. Vostóvia was ascended by a party of the Western Union Telegraph Expedition, in August, 1865, and found to be 3,216 feet high by mercurial barometer. The rocks of the summit were syenitic. Its latitude is 57° 03′ 23″, and longitude 135° 12′ 57″. The old Russian observatory was situated opposite the town, on Japan (*Japónski*) Island.

Sitka was the capital of the Russian Colonies in America. The Governor or chief Director of the Company had his residence here. The Governor's house is situated on the upper portion of the rocky peninsula on which the town was first built. A cupola is placed on top of it, one hundred and ten feet above the sea. From this cupola a light was shown when two guns were fired in the harbor below.

According to Mr. Davidson the shortest distance from San Francisco Harbor to Sitka is twelve hundred and ninety-six miles. From a point ten miles west of the south Farralon, off the Golden Gate, a direct course for the entrance to Sitka Bay can be laid. It is north, 23° W., twelve hundred and fifty-five miles. By the inner passage between the archipelago and the coast of British Columbia and Alaska, the distance is sixteen hundred and forty-seven miles. Large sailing vessels must go outside.

The town of Sitka, at the time of our visit in 1865, contained about one hundred and twenty buildings. As we saw the town from our moorings in the western harbor, the Governor's house and flagstaff, standing high above all the rest, were the most prominent objects. Beyond were the steeple and dome of the Greek church, and nearer the water the large storehouses, the counting-house, and various hulks, drawn up and used as storeships. The houses were all of logs, but painted a dull yellow; the metal roofs were red, and with the emerald green spire of the church, projected against the dark evergreens of the adjacent hills, presented an extremely picturesque appearance. It was quite unlike anything else in America, and seemed to belong to a world of its own. Much of it was more primitive than many western towns where the shingles are yet bright from the sawmill; yet the place was eighty years old.

Our reception from the officers of the Russian American Company was most cordial. All, including the ladies, vied with each other in trying to render our stay in Sitka agreeable. I need hardly add that they were quite successful.

The moisture of the climate renders Sitka disagreeable, and the continued cloudy weather makes it gloomy; but the one or two days during our stay, when the sun came out and the sky was clear, were exceedingly pleasant. The islets, with which the bay is crowded, are covered with wood to the water's edge, and many of the views in the harbor are exceedingly attractive. The principal buildings are the Governor's house, the counting-house, the barracks, church, and hospitals. The lions of the town consisted of the Governor's garden and a steam sawmill, to both of which we were introduced. The Indian village outside the stockade consisted of large log-houses, with a round hole in front

which served as a door. There were many curiously carved and painted sarcophagi of wood, in which the ashes of dead Indians were preserved.

Baránoff Island, on which Sitka is situated, is unexplored. The dense forest and moist soil, as well as the mountainous character of the island, renders exploration difficult and often dangerous. Manufactures of various articles used in their trade were established by the Russian American Company at Sitka. The population in 1867 was about one thousand, of which one third were Russians.

The archipelago ends at *Cape Spencer*. The ocean coast north of Cross Sound, according to Vancouver, is steep, woody, and much indented with coves and small rocky bays. Cape Spencer is the northwest point of Cross Sound. Fifteen miles northwest is *Icy Cape* of the Russians, on the mainland. Thirty-two miles northwest is the remarkable bay described by La Perouse, and called by the natives *Litúya Bay*. It is sometimes known as *Port Français*. It presents the appearance of a great fissure or rent in the high plateau which forms this part of the coast. It divides in the interior into two arms. It is said by La Perouse to be destitute of fish, except halibut, which were caught weighing over one hundred pounds. Salmon and trout abounded in the streams which fell into it. The mountains are precipitous, rising to the height of five or six thousand feet, and densely clothed with forests. The woods were full of berries; bears, martens, and squirrels were plenty. Four great glaciers enter the bay, and the magnificent scenery was declared by that navigator to surpass in grandeur the profound valleys of the Alps and Pyrenees.

The Russians had entered this bay long before La Perouse, and at one time contemplated establishing a post here. There are several Indian villages of the Thlinket family, in or near the bay, and a large fishery at the mouth of a stream on the coast a few miles north of the entrance. The next most important promontory, northwest (twenty-two miles) from Litúya Bay is *Cape Fairweather*. It is said to be in lat. 58° 50′ 12″ N. and lon. 137° 48′ W. The coast northwest of this point to *Bering* or *Yákutat Bay* is narrow, low, covered with wood and backed by high mountains. Between *Cape Phipps*, or *Ocean Cape* of the Russians, and

Cape Manby, is the entrance to Bering Bay. It was so called by Cook and Vancouver, as being the bay in which Bering probably anchored in 1741. It was called *Admiralty Bay* by Dixon, *Baie de Monté* by La Perouse, and Yákutat by the natives. Here a Russian post was established. The coast from Cape Manby to *Cape Suckling* is forbidding in the extreme. La Perouse said that masses of snow covered a barren soil without trees. The mountains appeared to be a very little distance from the sea. A low table-land at their bases was covered with trees. This part of the coast is indented by a small bay, called *Icy Bay* on account of the glaciers which surround it. Off this stretch of coast for about one hundred miles are moderate soundings, known to the whalers as the *Fairweather Ground.*

Between *Kaye* or *Káyak Island*, in lon. 144° 53′ W., and the main is a shallow bay known as *Comptroller's Bay.* Between the 145th and 146th meridians, along the coast, lie the shoals and flats off the mouths of the Copper or Atna River.

West of lon. 146°, extending to 149°, lies the great *Chugách Gulf*, sometimes called *Prince William Sound.* It is crowded with islands, and extends its arms like tentaculæ in every direction, covering an extent of over twenty-five hundred square miles. The entrance is about fifty-five miles wide, and blocked with islands. The most important of these are *Montagu, Hinchinbrook, Knight*, and *Hawkin* islands.

Port Etches is on the southwest part of Hinchinbrook Island, in lat. 60° 16′ and lon. 146° 56′. *Constantine Harbor* opens into it. On this lagoon was situated the *Redoubt Constantine and Elena*, a post of the Russian American Company. It is described as being a well-built, stockaded fort, with two bastions.

Chugách Gulf, and the various islands in it, contain many excellent harbors. The Russians in old times built many vessels here. In *Chalmers Bay* a remarkable point was noticed by Vancouver, which bore stumps of trees cut with the axe, but far below low-water mark at the time of his visit. It has been appropriately named *Sinking Point.*

The climate of the Gulf is more severe than that of the coast to the southward, but in June, according to Portlock, most of the snow was melted. Fish, excellent timber, and berries, beside in-

digenous grain (*Elymus*) and wild peas, are reported to abound exceedingly. From the head of the Gulf a portage can be made to the head of Cook's Inlet. The natives are of the Innuit family, and are called *Chugáches* or *Chugáchigmut.*

Between the Gulf and Cook's Inlet is the great peninsula of *Kenái.* The ocean coast of this peninsula extends from *Cape Puget,* in lat. 59° 55′ and lon. 148° 33′ W., to *Cape Elizabeth,* in lat. 59° 09′ and lon. 151° 51′ W. This coast is indented by many inlets and bays, of which *Day's Harbor* and *Resurrection Bay* afford good anchorages. The latter was long the shipyard of the Russian American Company, and a post was situated there. The whole coast is abundantly supplied with wood, and glaciers occupy many of the gorges. Several groups of islets, called the *Chiswells* and *Pye Islands,* lie off the shores.

Near Cape Elizabeth are situated the Chugátz Islands (not to be confounded with the islands in the Gulf of Chugách), and a cluster called the Barren Islands. These are one thousand six hundred and seventy miles north, 42° W., from the Farralones off San Francisco Harbor.

The entrance to Cook's Inlet is between Capes *Douglas* and *Elizabeth,* with a passage on either side of the Barren Islands. Within the capes the inlet is sixty-five miles wide; fifty miles farther up it contracts to twenty-five miles, whence it gradually diminishes to twelve or fifteen. At its most northern latitude the river Suchítna enters the inlet in 61° 16′. Here the inlet turns to the eastward and southward, and is known as the *Turnagain Arm.* It is shallow, with a narrow channel, and receives the Fire (*Kneek*) River about lon. 150° W.

On the eastern shores of the inlet are *Port Chatham,* where the settlement of *Alexándrovsk* is situated, *English Harbor, Chugáchik Bay,* and *St. Chrysostom Harbor.* The small river Káknu also enters from the east. The eastern shores are low and covered with herbage and clumps of timber. Farther back the mountains rise to a considerable height, and contain large glaciers. The tides in the eastern portion are said to rise and fall thirty feet, so that the arm must be nearly dry at low tide. There are two islands, *Augustin* and *Kalgin,* in the inlet, and the water between Cape Douglas and the coast north of Augustin Island is known as *Kámchak* or *Kámishak* bay. On the east coast of

Cook's Inlet, at the mouth of the Káknu River, is situated *Redoubt St. Nicholas*. Some miles farther south is the settlement of *St. George*. These were both posts of the Russian American Company.

Leaving the Inlet, the southeast coast of the peninsula of Aliáska is abrupt, rugged, destitute of trees for the most part, indented with countless bays and coves of small size, and full of rocks. The first inlet of importance is the bay of *Katmái* in lat. 58°. Here Jurassic fossils were found by Wosnessénsky. On a lake in the vicinity petroleum is found floating. This part of the peninsula is separated from the Kadiák Archipelago by *Shélikoff Strait*, so named in honor of one of the most energetic pioneers who explored and developed this territory.

Kadiák and the adjoining islands, though separated by a broad expanse of water, appear to be a prolongation of the range which forms the peninsula of Kenái. The rocks are similar and the general trend is the same. The more protected portions of these islands are well wooded with fine timber, and they also contain, with the shores of Cook's Inlet, much of the best farming and grazing land. They are well populated and are really the centre of trade of the territory. *St. Paul*, the principal settlement, by its position and importance, deserves, far more than Sitka, the honor of being the capital of the territory of Alaska. It has been several times the principal dépôt of the Company, but political reasons determined them to keep the capital as far south as possible. Beside the settlement at St. Paul, there are three villages on *Three Saints' Bay*, *Afognák*, *Spruce*, and *Woody* islands, and a number of native settlements. The dépôt of the Ice Company is on Woody Island. A frequent and noticeable feature of this part of the coast is the pinnacles, or needle rocks, which may be found off almost every bluff or point.

Westward from Kadiák we pass the Sémidi Islands and *Chírikoff* (or Úkamok) *Island*, on which the Company had a factory. The marmot (*Sp. Parryi*) was introduced here and multiplied to such an extent as to give employment to a number of persons who were sent here from Sitka (as a punishment for slight offences) to prepare the skins. On *Pópoff* and *Únga*, islands of the Shúmagin group, are settlements. Únga contains two excellent harbors. *Coal Harbor* on the north abounds with cod, and is a

frequent rendezvous for the fishermen. *Délaroff Bay,* at the southeast end of the island, has a settlement upon it. Nearly due west from Únga, on the peninsula of Aliáska, is the *Belkóffski* or *Squirrel* settlement. It would be out of place to describe here the myriads of rocks, shoals, and islets which cluster about the shores of the peninsula. It terminates at *False Pass,* otherwise known as *Isanótski Strait;* long marked as navigable from French surveys in the last century, but really an impassable lagoon. Upon it is situated the *Morse* settlement of Aleutians. West of it extends the island of Únimak, separated from Akhún and Tigálda by the Únimak Pass.

In the Aleutian chain, which has already been described, the principal settlements are upon the islands of Unaláshka, Akhún, Tigálda, Úmnak, Ámlia, Átka, Adákh, and Attú. The principal harbors or anchorages are, in Unaláshka, *Iliúliuk* or *Captain's Harbor, Beaver,* and *Mákushin* bays; in Ámlia, *Svéchnikoff Bay* and *Korovínski Bay;* in Tánaga, *Slavarássi Bay;* in Amchítka, *Kírloff Bay;* finally, in Attú, *Chíchagoff Harbor.*

Captain's Harbor, Unaláshka, next to Kadiák and Sitka, is the most important place in the territory. A considerable trade has sprung up here since the purchase of the territory, and it is a favorite point for vessels to touch and obtain water, wood, or fresh vegetables.

Chíchagoff Harbor in Attú, if we may believe reports, is already the seat of smuggling operations more or less extensive, by which Siberian sables and Chinese opium are made to do duty as the productions of Alaska.

Returning to Aliáska, and going eastward after leaving False Pass, the first point is *Granite Cape,** in lon. 163° 15′ W. and lat. 55° 12′ N. (approximate). East of this cape the coast is deeply indented with bays and coves, all very shallow; the shoals extend off the coast for several miles. The general trend is to the northeast. *Amak Island,* a sharp volcanic peak about two thousand feet high, lies in lon. 163° W., and lat. 56° 32′ 30″ N., with unexplored shoals W.N.W. and S.S.E. of it. Passing *Cape Leónovich* in lon. 162° 15′ W., we arrive at *Cape Ródgnoff* in 161° 08′ 15″. East of Cape Ródgnoff is a shallow bay, and a long island known as *Walrus Island.* The eastern end of the lagoon is called

* These positions are from the sketch charts of the Russian American Company.

Port Möller, and it is said to carry six fathoms well in. The coast beyond trends N.E. by E. and is straight and even, with shallow water off of it. About lon. 159° 20′, stretching northeastward to *Cape Strógonoff* is a shoal with some small islands called the *Nórpichoi* or *Seal Islands*. The coast trends in a more and more northerly direction, with from five to ten fathoms ten miles off shore. Passing the shallow mouths of the Sulíma, Úgaguk, and Náknek Rivers, the long and shallow northeastern end of Bristol Bay makes up to the mouth of the Kwíchak River, in lat. 59° N., lon. 156° 57′ W. To the west, broad shoals extend far off shore to the mouth of *Nushergák Bay*. This bay is about fifteen miles long and ten wide, very shallow, and obstructed by sand-bars and shoals. Upon its northeast extremity, at the mouth of the Nushergák River, is situated the *Redoubt Alexandra* in lat. 58° 57′ 06″, lon. 158° 18′ 24″ (Wrangell). The west shore of the bay is formed by a broad, low point, rising to the northward into hills, and said to be separated from the mainland by a slough, which passes from Nushergák Bay to the shallow lagoon of *Kúlikak*, opening on *Kúlukak* Bay. The southernmost extremity of this point is called *Cape Constantine*, (lat. 58° 25′ 05″ and lon. 158° 51′ 30″) and is said to have a long, narrow shoal extending S. E. by S. ten miles from shore. West of Cape Constantine the shore trends northwesterly upon Kúlukak Bay, which contains several islands. The most western and largest is *Hágenmeister Island*, named after one of the governors of the territory. It is separated by a narrow and shallow pasage from the mainland; the waters northeast of it are called *Gúgiak Bay*, from a river of the same name which empties there, in lat. 59° N., lon. 160° 23′ W.

Westward of the island the shore is high, rapidly rising inland into mountains. The southern point of this promontory, in lon. 161° 48′ 30″, is nearly due west from the southern point of Hágenmeister Island, distance about twenty-four miles, and is situated in lat. 58° 35′ (approximate). This important promontory being unnamed in the Russian charts, I propose to name it after the distinguished head of the Coast Survey, *Cape Peirce*. A small island is reported to the east of it at a distance of less than a mile. Just west and north of it is a small protected cove, from which, due west, extends the long, narrow promontory of *Cape Newenham*. From the north side of the neck of this

promontory the coast extends nearly due northward, intersected by *Chákwan* and *Goodnews* bays. From the north point of the latter well into the mouth of the Kuskoquím extend wide shoals along shore. The same is true in a still greater degree of the opposite shore. This bay is called *Kuskoquím Bay* from the great river which empties into it. Under a line drawn from the north point of Goodnews Bay to *Cape Avínoff*, the greatest depth between the shoals is eight fathoms. In lat. 59° 48′ is the bar with only two fathoms, and a little lower down the channel is divided by a sand-bar which has six fathoms in the narrow channel to the east, and only two in the broader western one.

West of the mouth of the Kuskoquím the shore is moderately low, with very broad shoals extending from ten to twenty-five miles off shore. Entering *Étolin Strait*, sometimes marked as *Cook's Strait*, we have to the west of us Núnivak Island, and to the east the coast of the continent, fringed with broad shoals, and indented with large, shallow bays. The southeast point of the island, which has rocks off of it for several miles, is called *Cape Étolin*, after the explorer of the strait. The average depth is five to eight fathoms, deeper toward the island.

Núnivak is lightly wooded in sheltered parts, and contains many high hills. It is inhabited by Innuit, very degraded and filthy, but noted for the beauty of their ivory weapons and kyaks. Tobacco trades well here. There are no harbors in Núnivak. The island is of a triangular shape, lowest toward the north.

The east head of the northern entrance to the strait is *Cape Vancouver*, in lat. 60° 36′ N., lon. 165° 15′ W. The west head is *Cape Khramchénko* in lat. 60° 42′ N. and lon. 165° 50′ W. The former is elevated and hilly.

North of Cape Vancouver is *Étolin Bay*, a wide and shallow indentation of the coast into which the Kwinchagák River falls a mile or two south of lat. 61° N. The north shore of the bay trends nearly east and west; about lon. 165° 15′ it bends more toward the north, and in lon. 166° 10′ W. and lat. 61° 14′ N. is the first of a series of capes which make out from the coast, enclosing a series of bays more or less shallow. The mainland is rolling with low hills. These capes, with one exception, being unnamed, it has been proposed to dedicate them to the later explorers on the Yukon. The first has been named *Cape Whym-*

per. The next to the northward in lat. 61° 22′ and lon. 166° 24′ has received the name of *Cape Dall.* The next, a high promontory, from which a long arm extends some eight miles in a northerly direction, is *Cape Románzoff*, named after the Russian nobleman and statesman who fitted out Kotzebue's expedition. The southern and boldest portion of the cape is situated in lon. 166° 17′ and lat. 61° 29′ and the western face trends, with some indentations, in a nearly north and south direction. On the Russian charts shoal water is laid down extending several miles out from the cape, with six fathoms six miles from shore.

North of Cape Románzoff is a shallow bay with three fathoms off the entrance. The next, *Cape Smith* (named for Captain E. E. Smith, to whom we owe the first chart of the Yukon delta), is a long, low point extending in a northeast direction, the extreme end being in lat. 61° 47′ and lon. 166° 23′ 30″ In the narrow bay north of this cape, which has not been sounded, two small streams empty. The north shore of this is formed by *Cape Dyer* (named for Lieutenant J. T. Dyer, who assisted in the reconnoissance of the Yukon-mouth), a moderately high, rounded cape, the extremity of which is in lon. 166° 08′ and lat. 61° 49′.* Its trend is nearly parallel with Cape Smith. North of Cape Dyer, the shore trends in a southerly and easterly direction, ten or twelve miles, to the mouth of the Kun or Maria Louisa River, so named by Captain Smith. From this point the coast takes a northerly direction to the mouth of the Muganólwik River, in lat. 62° N. Seven miles off the coast are two long islands, or dry sand-bars, known as the *Sandy Islands.* The southwest point of the southern island is six miles distant from the north shore of Cape Dyer. Between them we have three and a half, four, and eight fathoms going from the cape to the island. Eastward from the same point on the cape we find three and a half, three, one and a half, two, one and a half, and one fathom to the shore, nine miles north of the river mouth. North of this point, between the islands and the coast, and beyond, to the mouth of the Kipníuk or Black River, in lat. 62° 12′ and lon. 165, the shore in strong north winds is dry for a distance of six or seven miles from the usual coast line.

* The latitude and longitude of these capes is approximate, determined by bearings from Cape Románzoff.

The bay north and east of Cape Dyer and southeast of the southern sand island, it is proposed to call *Scammon Bay*, in honor of Captain C. M. Scammon, U. S. R. S., Chief of Marine of the Western Union Telegraph Expedition. It affords good anchorage for small vessels except in a northwest wind. The country in from this part of the coast is low, marshy, and full of small sloughs, lakes, and rivers.

From the mouth of the Kipníuk River to *Pástol Bay* the coast is occupied with the Yukon delta. It is everywhere low and nearly level; from Cape Dyer to *Cape Shallow Water* of Cook (*Point Románoff* and *Point Aziágakak* of the Russian charts) there are no landmarks whatever.

The water off this part of the coast is very shallow, and close to shore is often nearly dry in strong northers, with the exception of the *Kúsilvak* and *Kútlik* channels. The Kipníuk or Black River is a narrow and rather shallow stream, and empties by three or four sloughs, the most northerly of which has been called the *Devil's Slough*, because it is so extremely tortuous. Here immense quantities of wild fowl breed; eggs and birds in their season are found in incalculable numbers. At the mouth of almost every slough or river, Innuit villages may be found. Northeast three or four miles from the mouth of the Devil's Slough is a small river, at the mouth of which is situated the *Téc-atee-ógemut* village. About five miles farther in the same direction is the mouth of the *South Slough* of the Yukon. This is one of the longest and most shallow of the Yukon-mouths. It is frequently too dry for the passage of bidárkas. North of this mouth off shore are five dry sand-bars or islands. Northeast three miles is the mouth of the *Kúsilvak Slough*. This is the true Yukon-mouth, being the only one which carries a deep channel out to sea. The mouth of the Kúsilvak is in (approximate) lon. 164° W. and lat. 62° 26′ N. There is a village on the south point called *Kwcé-ahogemut*, and one on the north point known as *Onúg-anúgemut*. Between them we have nine fathoms, and the depth decreases as we ascend the slough about a fathom a mile, until we have four or five fathoms, which may be carried up the Yukon without interruption, three hundred miles, to the mouth of the Ánvik River.

Passing to the westward from between the villages, the channel

goes between the two largest sand-bars, carrying nine, eight, seven, and just between the eastern points of the bars five, three, and at last two and a half fathoms, about eight miles from the mouth of the Kúsilvak. This is the shallowest place. Thence the channel trends southwesterly, with three and three and a half fathoms, then passing on either side of a long bar, on the north side we get four fathoms steadily for as many miles, when it decreases off the point of the long bar to three, then three and a half, four, and five, gradually trending in a more southerly direction as far as sounded, which was about eight miles west of the mouth of the Kipníuk River. This channel is indicated in the map which accompanies Baer and Helmersen's Beitrage (St. Petersburg, 1839), though without any soundings. That map was probably drawn from information derived from the explorations of Glásunoff, in 1835 – 38, through Admiral Wrangell.

The length of the Kúsilvak is about forty-five miles, and its course from the mouth is nearly southeast. It is three or four miles in width. The point north of the mouth separates it from a wide but shallow slough, named the *American* mouth by Captain Smith. This trends in a northeast direction, and opens into the *Kwikhpák* mouth of the Yukon. This is wide, but also shallow, and offers no navigable channel by which to enter the Yukon. It debouches on the coast about lat. 62° 41′. For a description of the many and intricate sloughs which intersect the delta, the reader is referred to the map. The Kwikhpák is about fifty miles long.

The most northern slough or mouth of the Yukon opens into Pástol Bay, and has a depth of three fathoms. It is called the *Uphoón* by the Russians. Through this slough the goods for the trading-posts on the Yukon and Kuskoquím were always carried. Their course was about as follows. Taking advantage of a high tide, the boat from Redoubt St. Michael's entered the northern end of the channel or Canal which separates the island of St. Michael's from the mainland. On the bar at this entrance five feet of water may be obtained in the channel during spring tides. Once over this bar, which is about two miles broad, two fathoms or more water is found in the Canal. Passing through the Canal and by the mouth of the Pikmiktálik River, the next difficulty is experienced off Point Románoff. Here the water is very shallow for a long distance off shore ; three miles out, at a proper season of the

tide, four or five feet may be obtained. With a north wind all this is nearly dry. A pilot is needed to carry the vessel through the shallows of Pástol Bay; but once over them and into the Uphoón, no further trouble is experienced. Vessels drawing not over four feet can in this way safely enter the Yukon. The tides at the Yukon-mouth average three feet, spring tides five feet, but the rise is greater just inside the mouths on account of the slack water. There is but little saltness to the water off the delta, and it is discolored for miles out of sight of land. There is little doubt that the shallow plateau of Bering Sea is due to the detritus brought down by the Yukon, Kuskoqúim, and other rivers. Near the mouth of the Uphoón there is a Russian house and barrábora called *Kútlik*. Not far beyond is the village of *Pastólik*, at the mouth of the Pastólik River, and the shore of Pástol Bay curves gently toward the east and north to Point Románoff. A small stream, the Pastoliák, comes in from the lakes and marshes back of Pastólik.

Point Románoff is a solitary rounded hill of metamorphic silicious rock, in lat. 63° 06′ and lon. 162° 48′ W. (approximate). It forms the north extremity of Pástol Bay. Beyond it the coast is low, strewn with volcanic rocks, and trending eastward and northeastward to the mouth of the Pikmiktálik River. Northeast eight miles in lon. 162° W. is the southwestern entrance of the Canal. Due north is the channel between *Stuart* and *St. Michael* islands. In the north entrance to this channel three fathoms may be obtained, with shelter from most winds, and great abundance of dry driftwood, much of it large enough for masts or spars. West and southwest of the north point of Stuart Island, the line of three fathoms may be drawn, extending southward along the coast to the Kúsilvak Channel, thirty miles off shore. The water shoals very gradually, and the bottom is soft and makes good holding ground. The shores of the islands are rocky, and offer few good points for landing. Good water cannot be obtained upon them.

In *Tébenkoff Cove*, on the eastern point of St. Michael Island, is situated *Redoubt St. Michael*, in lat. 63° 28′ and lon. 161° 51′ 54″ (Kellett). Northeast ten miles from the eastern point of St. Michael's Island is *Egg Island*, about which anchorage in three and a half fathoms, mud and shell, may be obtained. Two

and a half fathoms may be carried well up into the Cove, until opposite the boat-house. This is the best place for small vessels. The rise and fall of tides in the Cove will not average over four feet. The second tide is very uncertain, and sometimes hardly perceptible. They all depend much upon the wind. A strong north wind will sometimes diminish the depth of water by six feet in twenty-four hours, and a strong south wind may raise the water three or four feet in the same time. Vessels coming in to the Cove should keep well off shore until past Egg Island. The small cove where boats land is full of rocks, and care should be taken to avoid one which lies directly in the middle of the entrance. Fresh fish, game, or deer meat can usually be obtained here by vessels. Good water can be obtained directly on the shore of the mainland, in a small rocky cove opposite the Redoubt.

The shores of Norton Sound, trending eastwardly and northeastwardly to *Tólstoi Point*, are rocky, and present no boat harbors or good landing-places. A few — the *Major's Cove, Kegiktówruk Cove*, and a cove near the mouth of the Golsóva River — afford some protection for skin boats. Beyond, and close under Tólstoi Point, small vessels will find protection from south and southeast winds, in four fathoms, sandy bottom. Beyond we have a narrow sandy beach, covered to the base of the perpendicular bluffs at high water. Off the mouth of the Unalaklík River extensive shoals prevail, but three miles off shore five fathoms may be obtained. The fort at the mouth of the river, according to Kashevároff, is in lat. 63° 52′ 36″ and lon. 161° 51′ 54″. North-northwest from the fort lies *Bésborough Island*, in lat. 64° 06′ 30″ and lon. 161° 07′. This is probably too far east, and neither of the above positions can be relied upon.

Inside of Bésborough Island, anchorage may be obtained in four fathoms in northerly and easterly weather. The water near the shores and in the greater part of *Norton Bay* is very shallow ; hardly deep enough for boats in the head of the bay. *Cape Denbigh* on the east and *Cape Darby* on the west form the heads. Numerous shallow rivers empty into the bay. The country east of Norton Sound and Bay rises into rolling hills from five to fifteen hundred feet in height. West of Cape Darby is *Golofnína Bay*, named by Étolin from the vessel in which he

explored it in 1820. The shores are high and rocky, and good protection from all winds is reported at the head of the bay, in four fathoms, sand. Here a shallow lagoon, known as *Golovín Sound*, empties. From the similarity of the names some confusion has resulted. This lagoon is said to be connected, by the Fish River and a series of lakes, with *Grantley Harbor*, so that, in summer, skin boats may pass from the one to the other without a portage. The northern shores of Norton Sound are high and rolling. *Point Nome*, the most southern land west of Golofnína Bay, is situated in lon. 165°. Beyond it, the coast trends in a northwesterly direction to *Point Rodney* and Bering Strait. The former is situated in lat. 64° 39′ and lon. 166° 18′, according to Beechey. *Áziak* or *Sledge Island* of Cook, on the same authority, is in lat. 64° 29′ 30″ and lon. 166° 01′ 30,″ about eleven miles off shore. *Úkivok* or *King Island* is situated in lat. 64° 58′ 30″ and lon. 167° 58′.

Port Clarence is protected on the south and west by a long low point of land, and affords a secure anchorage. On a small sand-spit is the Innuit village of *Noókmut*. Grantley Harbor is situated at the head of the bay, and affords excellent anchorage in four fathoms. This harbor is perfectly protected, and vessels of various exploring expeditions have frequently wintered there. A large lagoon or lake opens into it from the east, near *Táksumut* village.

The northern shore of Port Clarence is high, and trends northward and westward to *Cape Prince of Wales*. This, the most western land of the American continent, is situated in lat. 65° 33′ 30″ and lon. 167° 59′ 12″. The native name is King-égan. North of it the shore is low and gradually trends more and more to the eastward, the only indentation being the shallow *Shishmareff Inlet*. About lon. 163° 34′, *Cape Spanberg* forms the most northern point of the peninsula, and the western head of *Kotzebue Sound*.

The great peninsula enclosed by the waters of Norton Bay and Sound, Bering Strait, the Arctic Ocean, and Kotzebue Sound, it is proposed to call the *Káviak Peninsula*, from the native name of Kavi-íak and the Káviak Innuit who inhabit it.

Kotzebue Sound is comparatively shallow, fourteen fathoms being the greatest depth reported. To the eastward it is pro-

longed into several shallow inlets. *Escholtz Inlet* or *Bay*, known as *Kúnguk* to the natives, receives the waters of the Kúnguk River. *Hotham Inlet* receives the Inland and Kówak rivers, and through Selawik Lake the waters of the Seláwik River.

From *Cape Krúsenstern*, the north head of the Sound, the coast trends to the northwest, with many shallow lagoons along shore. The country inland is generally low, with a few hills. In lat. 68° 21′ *Point Hope* projects into the sea. It is a long, low, sandy point, and reaches lon. 166° 48′, with a shoal extending several miles west of it. North of it the coast is high, to *Cape Lisburne*, in lat. 68° 56′ and lon. 166° 08′. Here the shore trends suddenly eastward to *Cape Beaufort*, in lat. 69° 13′ and lon. 163° 34′. Northeasterly the coast is again low, and we reach *Icy Cape* of Cook, in lat. 70° 20′ and lon. 161° 40′. The next cape, *Point Barrow*, is the most northern land of Alaska territory, and is situated in lat. 71° 27′. The coast now turns to the eastward and southward, and about twenty-two miles from Point Barrow is *Dease Inlet*, a shallow and deep indentation of the coast. In lon. 150° 42′ the Colvile River empties into the Arctic Ocean. Proceeding eastward, we finally arrive at *Demarcation Point*, in lat. 69° 40′ and lon. 141° 07′ 30″ W., which brings us nearly to the boundary line. The whole northern coast is low, without good harbors, and fringed with numerous shoals. Inland it rises into hills and low mountains, which have been plentifully bespattered with names by the English explorers. The most important, as regards height, is the Románzoff range. There are a few villages of the western Eskimo along the coast, and between Point Barrow and Cape Lisburne.

It may not be out of place here to mention that *East Cape*, the most eastern land of Asia, is situated in lat. 66° 03′ 06″, and lon. 169° 43′ 48″, according to Beechey. From Cape Prince of Wales to East Cape is fifty-four miles, from the former to Fairway Rock is nineteen miles, thence to Ratmánoff Island thirteen miles, and thence to East Cape twenty-two miles. Nine miles northwest of *Cape Chukótski*, the most southern land of the Chúkchee peninsula, is the entrance to *Plover Bay*, in lat. 64° 23′ 30″ and lon. 173° 26′. This fine bay is the general rendezvous of the whalers and trading vessels in the fall. It contains several very good anchorages, the most protected of which is *Snug Harbor*, at the

north end of the bay, behind *Whale Island*. Here, and in *Emma Harbor*, another arm of the bay, any vessel might safely winter. The bay is surrounded on all sides by high, rocky hills, the principal of which, Mount Kennicott, I found to be 2,343 feet high. The rounded hill which fronts the sea to the east of the entrance is known as Bald Head. The barren hills give this bay a cheerless aspect to the landsman; but sailors will find comfort in the bountiful supply of good water, the secure anchorage, and the tame reindeer meat and fish which may be obtained from the natives. Scurvy grass is abundant on the sandspit in the bay, but no wood, except a little driftwood, can be found.

The principal ports to the southward are Nizni (or lower) Kamchatka, at the mouth of the Kamchatka River, and Petropávlovsk. The latter is situated on *Niakína Cove*, *Avátcha Bay*, and was founded in 1739 by Iván Jelagin, Bering's pilot, and named after the two vessels of the expedition. It is at present without a garrison, and probably does not contain over fifteen hundred inhabitants. It is the residence of the Governor of Kamchatka, and the principal port of the peninsula. An excellent view of it, by Frederick Whymper, may be found in the London edition of Hartwig's "Polar World."

River System. — The Pacific watershed of Alaska is much smaller than that of Bering Sea. In most places the mountains approach closely to the seashore, and the water discharged by the rivers is collected far inland, and forces its way to the sea through some narrow pass or perpendicular cañon. Much of the rainfall is congealed on these lofty summits, and finally reaches the sea by slow degrees as a glacier-torrent.

Just east of the boundary line, the *Nasse River* of British Columbia debouches into Observatory Inlet. It is one of the most prolific in fish of the rivers that flow into the Pacific. Its course, as determined by the Western Union Telegraph explorers, is very different from that laid down for it on most maps. Rising in a small lake, near the head-waters of the *Skoot River*, it flows southward about fifty miles, then southeast and southwest in a broad curve, until it falls into the Inlet. Part of its course is narrow and rapid, over falls and through cañons, near which are Indian fishing villages. It is not navigable for more than a quarter of its length. At its mouth is an English trading-post.

The next river of large size is the *Stíkine*. This has become well known on account of the gold-diggings on its banks. These are all situated in British territory. The course of the Stíkine has been determined by the explorers of the Western Union Telegraph Expedition. One of their stations was situated near the mouth of the north fork in lat. 57° 28′ N. and lon. 129° 56′ W.

The head-waters of the South Fork and Pittfield branch extend as far east as lon. 127°. The entire length is over two hundred and fifty miles, and it is navigable only for boats.* The North Fork is about forty miles long, and rises on the east side of the Bald Mountains, near the head-waters of the Yukon. The Russians, under Commander Bassárguine, explored the river for about sixty-five miles in 1863.

A small stream, called the *Taku* (not Táhco), flows into Glacier Arm of Stephen's Strait. About 1840 it was ascended for thirty-five miles, by Mr. Douglas of the Hudson Bay Company. It is less than sixty miles in length, and on old maps was usually prolonged far into the interior, and confounded with the Táhco River, one of the streams which form the Yukon. This error was corrected by the Telegraph explorers. The current is very rapid; the stream is narrow, flowing between stupendous mountains, and navigable only for canoes, with frequent portages.

The *Chilkáht River*, a much larger stream, enters the northern extremity of Lynn Channel. The general direction of this river is from the north. It is said to flow between bare and precipitous cliffs, destitute of timber. The Indians ascend it, against a very rapid current, in twenty days, when they make a portage by several lakes to the Lewis River, a tributary of the Yukon. This portage is laid down on the map which accompanies this volume, from an Indian sketch map. The river is probably a hundred miles long, with numerous branches. Iron ore is reported by Mr. Davidson to exist in the vicinity of the mouth.

Northwest of Cape Fairweather the river *Álsekh* flows by five mouths into the sea. The ground through which these pass is so low, that at very high water it is covered by the sea, forming a lagoon fifteen miles long and twelve wide, which has received the name of *Dry Bay*. It was named by La Perouse *Bering's River*, and is supposed to be a short stream.

* It is said, during the spring freshets, which greatly swell the river, to be navigable for small steamers, with difficulty, for a hundred miles or more.

In lat. 60° 17′ and lon. 145° 20′ lies the mouth of the *Atna* or *Copper River*. The delta is thirty miles long by four or five wide, and is overgrown with willow. The principal mouth is at the northwest end of the delta. Here is an Innuit village (Aláganik). The lower part of the river flows through low ground, with many lakes. Our knowledge of the course of this river is due to the researches of a Russian, named Serebránikoff, and is rather dubious. He was killed by the natives for his bad conduct, but his papers were delivered up. There are said to be rapids seventeen miles above the delta, and from them the river pursues a northerly course. About one hundred miles above the rapids a branch called the *Chechítno* falls into the Copper River. At this point a single Russian remained for a few years and traded with the natives. A river enters from the west, which heads in a lake from which a portage can be made to the Fire (*Knik*) River, which falls into Cook's Inlet. Little is really known about the Atna River, but the banks are said to be mountainous, well wooded, and with occasional glaciers. The precise locality of the copper from which it takes its name is unknown. It is found in rolled masses of native metal, similar to that found in the Lake Superior district, and the locality is supposed to be within a hundred miles of the mouth. It has long been an article of trade with the Indians; one of the articles which Bering's expedition found on the coast where they landed in 1741, was a whetstone on which copper knives had been sharpened. The natives knew nothing of iron before the traders came, but it was an easy matter to beat a rude knife out of native copper.

No streams of any size fall into Chugách Gulf. Two, however, empty into Cook's Inlet.

The *Knik** or *Fire River* falls into Turnagain Arm from the northeast. It was examined by Cook and Vancouver. It is only navigable for twelve miles, when it becomes wide and shallow. The Russians are said to have ascended it in skin boats to a lake called *Plavéjno*, whence by portage and river travel the Copper River may be reached. Our knowledge of it is slight, and it is supposed to be less than one hundred miles long.

A few miles northwest of the Fire River mouth lies the mouth

* Erroneously written Kuyck, Kweek, Knuyk, Kook, &c.

of the *Suchítna River*, with a broad shoal across it. Málakoff is said to have explored it in 1834. Its course is mapped from Russian sources, and it is supposed to be several hundred miles long, but we know nothing of it with certainty.

On the east shore of the Inlet are the small *Staríchkoff* and *Káknu* rivers. They are insignificant streams fed by glaciers. In the sands of the latter, Doróshin was said to have found gold.

West of Augustin Island is a small stream, by which, through the mountain gorges, a portage is made to *Lake Iliámna*. From the northwest slope of the peninsula of Aliáska several small rivers flow into Bristol Bay. The country between and at the bases of the high mountains, which form the prolongation of the Alaskan Range in the peninsula, is very low and marshy. In many places large lakes are found, some of which are so near the level of the sea that the water is brackish. These empty into the sea by rivers on either side, and it is said, that in some places a portage, or rather passage, can be made in canoes from one shore of the peninsula to the other, hardly lifting the canoe out of water during the journey. The larger of the rivers which flow into Bristol Bay as we go eastward are the *Sulíma*, the *Ugagúk*, the *Náknek*, and the *Kwíchak*. All derive their water from lakes of lesser or greater size, and the last from the great Lake Iliámna. This lake, though known for a generation, is yet unexplored. It is supposed to be rather shallow, and is known to be over eighty miles long, and about twenty-four broad, — fully half as large as Lake Ontario. It has been mapped as *Shélikoff Lake*, but the native name is quite as appropriate and more euphonious.

North of Bristol Bay is situated Fort Alexandra, one of the Russian trading-posts, at the mouth of the *Nushergák River*. This is a large stream, but shallow, and the harbor is a poor one. This river is very tortuous, flowing between hills, and deriving its supply from large mountain lakes.

In lat. 61° 20′ N. the head-waters of a branch of the Kuskoqúim interlock with those of the Nushergák.

On the right bank a large stream, called the *Aleknagák*, falls into the Nushergák near its mouth, heading in a large lake of the same name. About seventy-five miles above the Russian

post, another river is said to come in from the westward. The head-waters of the Nushergák are in a very mountainous country, said to be volcanic.

The whole length of the river is said to be about one hundred and fifty miles, but no satisfactory explorations have yet been made. To the westward a chain of rivers and lakes is said, on the authority of the natives, to connect with the head-waters of the *Ánniak River*, which falls into the Kuskoqúim. The winter mail to and from the Kólmakoff Redoubt on the Kuskoqúim is carried by natives, who go up the Nushergák, crossing to the *Hulítnak River*, passing down that to the Kuskoqúim, and then down the Kuskoqúim fifty miles to the Redoubt. No white man has ever penetrated into this wilderness, and the reports of the natives greatly magnify the rugged character and grand scenery of the portage. One part of it is said to be made through a chasm only a few yards wide between two volcanic mountains. Zeolites, sulphur, and blue carbonate of copper have been received as from this region, and the goshawk is said to abound there.

In lat. 60° N. lon. 162° W., at the head of Kuskoqúim Bay, the *Kuskoqúim River* enters the sea. This is the second largest river in Alaska, and the largest whose watershed is confined to the territory. In latitude it extends from 60° to nearly 64° N., and in longitude from 153° to 162° W. Its total length is estimated at between five and six hundred miles. Its principal tributary is the Hulítnak, before mentioned. The head-waters, though annually visited by traders, have never been satisfactorily explored or mapped.

In 1832, Iván Simónsen Lukeén, a Creole,* was sent, with a party of natives, up the Nushergák River to explore the portage to the Hulítnak River and the Kuskoqúim beyond. In 1818 the mouth had been visited by Kórsakoff, and in 1820, Kólmakoff, bidárshik of Nushergák Fort, explored the river for a considerable distance. Trading parties annually visited it, but no post was established until Lukeén's expedition, though Kólmakoff made a second visit there in 1830. About fifty miles

* Iván Lukeén, was born of Russian and Spanish-American Creole parents, in the Ross colony in California, about 1820, according to his own statement to me. He was well educated in the Sitka school, and proved active, energetic, and intelligent. At the time of his expedition he was acting as clerk for Kólmakoff. He was extremely short, muscular, of a swarthy complexion, and pleasant good-humored expression.

below the mouth of the Hulítnak on the Kuskoqúim, Lukeén built a quadrangular stockade, enclosing several buildings, which was called Lukeén's Fort. He was installed as commander, and reigned there, so to speak, for seven years. An excellent interpreter, speaking the Innuit languages of the Lower Kuskoqúim with fluency, he adopted a mode of life not dissimilar in some respects to that of the natives, among whom he attained great influence. In 1835, Glásunoff explored the mouth of the Kuskoqúim, and from that time forth the post was elevated to the dignity of a Redoubt, for which the supplies were carried in boats up the river. In 1841 some parts of the post were destroyed with fire by the Indians. Kólmakoff, then Uprovalísha of Fort Alexándra at Nushergák, was sent to the Kuskoqúim and rebuilt the Redoubt, which then took his name. In 1866 the garrison, in charge of Uprovalísha Deméntoff, was withdrawn, and the post dismantled. After the establishment of posts on the Lower Yukon, the goods for Kólmakoff Redoubt were carried up the Yukon and across a portage, in lat. 61° 40′ 30″, to the Kuskoqúim. This was done on account of the difficulty of taking goods up stream against the rapid current of the Kuskoqúim.

About latitude 61° N. a small river, known as the *Kwinchagák*, debouches into the shallow waters of Étolin Bay northeast of Cape Vancouver. It has not been explored, but is known to be shallow, and is supposed to be about fifty miles long.

North of Cape Dyer, a small river, called by Captain Smith the *Maria Louisa River* (*Kun* of the Innuit), empties into Scammon Bay. Ten miles from the mouth is a native settlement, known as Kúttenmut. Several other shallow streams come to the coast between Scammon Bay and the Yukon delta. These are, as we go northward, the *Muganólowik*, the *Pope's River*, the *Black* or *Kipníuk River*, and the *Teé-at-iókwik River*. All of these were formerly supposed to be sloughs of the Yukon, and are mapped as such on most maps. The Black River is the largest, and is supposed to be about fifty miles long.

The Yukon delta occupies the coast between lat. 62° 21′ and 62° 50′ and extends inland nearly sixty miles. The deepest mouth and true channel is the *Kúsilvak*, but the widest is the *Kwíkhpak*. The Russians entering the delta by the *Uphoón* or northern mouth, which opens into the Kwíkhpak, and learning

that name from the Innuit tribes at the mouth, have erroneously applied it to the whole river, much as a person first entering the Ganges might apply the name Hooghly to the whole river, from the circumstance that he entered it by that mouth. The delta has already been described in the account of the coast.

The head-waters of the Yukon were known to the traders and trappers of the Hudson Bay territory early in this century. In 1837, Glásunoff explored the delta of the Yukon, and ascended the river as far as the mouth of the Ánvik River. The following year, Málakoff explored as far as Nuláto, where a post was established under the command of Notármi. The garrison returned to St. Michael's in the winter, and the natives burnt the fort during their absence. In 1841 a permanent post was established by Derábin. In 1842, Lieutenant Zagóskin reached Nuláto, and in the spring ascended the Yukon as far as Nowikákat. Here he turned back and reported that it was impossible for skin boats to ascend any farther. In 1847, McMurray descended the Porcupine River and founded the trading-post of Fort Yukon. Soon after, Mr. Robert Campbell descended the Upper Yukon from Fort Selkirk, at the mouth of the Lewis River, to Fort Yukon. In the autumn of 1860, Robert Kennicott arrived at Fort Yukon, and in the spring of 1861 descended as far as the Small Houses.

About this time the Russians began to visit Nuklukahyét to trade in the spring. Strachan Jones, Esq., commander at Fort Yukon, had sent several parties of Indians to trade at the same point, and in 1862 descended the Yukon in boats, as far as Nowikákat, thus really completing the chain of exploration begun by Zagóskin. Still, as there was no communication between the English and Russians, the identity of the Yukon with the Kwíkhpak of the Russians remained unknown. The Russian chief trader at St. Michael heard of the visit of the English, and determined to find out something about the English fort, of which vague rumors had reached him through the Indians. Iván Simónsen Lukeén, before mentioned, was selected for this duty; he accompanied the trading party to Nuklukahyét, and left them there, reaching Fort Yukon, with the assistance of the Indians, in the summer of 1863. He remained long enough to fulfil his instructions, pretending to be a runaway from the Russian ser-

vice; then stole away by night and reached Nuláto in his canoe in safety. Lukeén, therefore, was the first man to ascend the Yukon from the sea, and to determine its identity with the Kwíkhpak. The Russian Company took no action in the matter, and the information thus obtained was not made public. In the spring of 1866, Frank E. Ketchum, of St. John, New Brunswick, with Michael Lebarge, of Montreal, Canada, explorers for the Western Union Telegraph Expedition, in pursuance of orders received previous to the death of their commander, Robert Kennicott, ascended the Yukon to Fort Yukon in a bidárka with Lukeén, who now a second time visited the English post. They returned to Nuláto, and crossed the portage to St. Michael's. In the month of March, 1867, the same undaunted explorers, without Lukeén, undertook their perilous journey with dogs and sleds, and arrived safely, May 9th, at Fort Yukon. Here they remained until the ice was well out of the river. May 25th of the same year, Frederick Whymper, of London, and the writer started for Fort Yukon in a bidarrá, arriving there June 23d. Meanwhile Ketchum and Lebarge had pushed their investigations in canoes as far as Fort Selkirk. They returned to Fort Yukon, and in company we descended to the Yukon-mouth, and proceeded by sea to St. Michael's. During the summer, Peter McLeod, an employé of the Hudson Bay Company, ran away, and descended the river to Nuláto, afterward crossing by the portage to the Redoubt. We are the only party who (up to 1868) have descended from the Upper Yukon to the sea by the river.

In August, 1867, Michael Byrnes, of British Columbia, explored the head-waters of the Yukon from Lakes Kennicott and Ketchum to Táhco Lake. At this point he was recalled, as the suspension of operations by the Telegraph Company rendered his services no longer necessary. The short distance between Lake Lebarge and Táhco Lake is all that remains untrodden by the white man. This portion of the river is well known from Indian reports, so that there is no question as to the identity of the Táhco and the Lewis rivers.

In 1867, Captain Elijah Everett Smith, of Edgartown, assisted by Lieutenant Joseph T. Dyer, of Washington, D. C., explored the delta of the Yukon, and to Captain Smith we owe the first chart of it which approximates in any degree to accuracy.

In the spring of 1868 the writer descended the Yukon from Nuláto to the sea, and then proceeded to the Redoubt.

This completes the history of the explorations of the Yukon. Zagóskin, Surgeon Adams and Lieutenant Barnard, of H. M. Enterprise in 1851, the servants of the Hudson Bay and Russian American Companies, one or two missionaries, Robert Kennicott and the explorers of the Western Union Telegraph Expedition, are the only white men who had visited the Yukon previous to July, 1868, as far as is known to me.*

The following arrangement will show the length of the Yukon, its various tributaries, posts, villages, and obstructions to navigation, more clearly than a mere description could do. The astronomical positions are mostly approximate.

Head-waters Táhco River.

Lake Kennicott, in lat. 57° 45′, lon. 130° 45′, true source of the Yukon, and head of the West Fork of the Táhco.

Lake Ketchum, in lat. 58° 30′, lon. 131° 10′, head of the East Fork. These two lakes are separated only by a narrow portage from northern affluents of the Stikíne River. The two forks are on either side of the Bald Mountains. The West Fork is about 126 (English) miles long, from Lake Kennicott to its junction with the East Fork, in lat. 59° 20′, lon. 132° 45′. Both receive various small streams on their way.

From the junction the Táhco flows through a valley, 38 miles, into Vátchee Lake (19 miles long), thence, 32 miles, through another small lake, into a cañon, and over

Head-waters Pelly River.

Frances Lake, in lat. 61° 08′, lon. 128°, on which was once situated Frances Fort, H. B. Co.

From the N. E. end of Frances Lake the Frances River flows, 49 miles, into Lake Finlayson, 23 miles long.

From Lake Finlayson, 27 miles, to the Pelly River, flowing from the Pelly lakes. At this junction Fort Pelly Banks was once situated.

From Pelly Banks, 95 miles, to a sharp curve of 15 miles, at the end of which are rapids with a bad portage. On its way the Pelly receives four small streams from the north and one from the south.

From the rapids, 35 miles, to the mouth of Macmillan's River (215 miles long), and thence to the lower rapids, 8 miles.

From Macmillan's River, which

* I have been unable to obtain any account of Kirkby's travels in the Hudson Bay territory. He is indirectly mentioned by Dr. Petermann as having visited Fort Yukon.

a rapid or cascade. Beyond, 12 miles, is another cascade, and the river passes into Táhco Lake, narrow, but 45 miles in length. From Táhco Lake, through a small lake, to Lebarge Lake, 58 miles. (Here the Portage River [30 miles long] flows into the Táhco, heading in a lake from which the Indians make a portage to the Chilkáht River, by means of a series of lakes and small rivers.) Through Lake Lebarge, 20 miles long, to the mouth of the Pelly, about 90 miles. Total length of the Táhco, including lakes, from Lake Kennicott to Fort Selkirk, 437 miles.

drains the southern base of the great bend of the Rocky Mountains, 48 miles, to the mouth of the Táhco or Lewis River, where Fort Selkirk (burned in 1851) was situated. Total length of the Frances and Pelly, including lakes, from Frances Lake (long erroneously mapped as feeding the Liard River) to Fort Selkirk, 300 miles. At Fort Selkirk, *Pinus contorta* grows six to ten feet high. This is the most northern limit of true pines on the Yukon.

YUKON RIVER.

Left Bank.

From Fort Selkirk to the mouth of the White River (124 miles long, heading in a large lake, and designated from the discoloration of the water by a white clay or mud), 94 miles.

Right Bank.

From the mouth of the White River to the mouth of the Stewart River (132 miles long, north of the Rocky Mountain range, and receiving many affluents and lakes, on one of which H. B. Co.'s Reid House was once established), 24 miles.

This part of the Yukon cuts through the great bend of the Rocky Mountain chain, and flows through a kind of cañon. Captain Ketchum reports the scenery as extremely grand; the Yukon is narrow, deep, and very swift, but with no other obstruction to navigation. The rocks were metamorphic quartzites and black slates, according to his report and specimens brought down.

Left Bank.

Mouth of the Deer River to the mouth of an unnamed river (50 miles long), 38 miles. Ten miles

Right Bank.

From the mouth of the Stewart River to the mouth of the Forcier River (35 miles long), 38 miles.

farther another small stream flows into the Yukon from the west.

Hence to the Deer River (40 miles long), 37 miles.

Mouth of the nameless river to that of the Sheep River, 31 miles.

In this vicinity the Yukon emerges from the mountains, becomes wider and full of islands. The banks are hilly, with abundance of timber, game, moose and deer. The water of the Yukon, above the mouth of the White River, is clear and dark. This clear water and the white water from the tributary flow for many miles side by side without mixing, but afterward the rapid current forces them together, and the Yukon water is discolored to the sea.

Left Bank.

Mouth of Antoine River to mouth of the Kótlo River (30 miles long, many bones of Pliocene animals reported by Rev. Mr. McDonald), 25 miles. At the mouth is a rounded hill, called also Mount Kótlo, toward which, if arrows are shot, say the Indians, they never fall to the ground.

Some distance above Fort Yukon a large slough cuts off the angle of the bend, and enters the Yukon some distance below the mouth of the Porcupine River. From this slough it is not many days' journey to the head-waters of the Tananáh, according to the Indians.

From Fort Yukon, in lat. 67° 12′, lon. 142° 35′, to the Birch River, 40 miles. (Recent astronomical observations by Captain Raymond, U. S. T. E., place it in lat. 66° 34′ N. and lon. 144° 21′ W., approximate.)

Right Bank.

Mouth of the Sheep River to the mouth of the Antoine River (25 miles long, named after Antoine Houle), 45 miles.

Mouth of the Kótlo River to Fort Yukon, 60 miles. Half a mile below, the Porcupine River enters the Yukon from the east. (By it the boats carry the goods from and the furs to Lapierre's house, to which it is navigable, a distance of 150 miles, and thence across the portage to Fort McPherson [on Peel's River flowing into the Mackenzie], 64 miles. The course of the Porcupine River, usually called Rat River by the Hudson Bay men, is through low country well supplied with lakes and streams.)

From the Birch River to the Small Houses, 80 miles. From these to the mouth of the Dall River (? 45 miles long ; named by Captain Ketchum on his sketch map ; Indian name Nótokákat), 40 miles.

From Fort Yukon to the mouth of the Dall River and the entrance of the Ramparts the Yukon is very wide, tortuous, full of sloughs, islands, and cut-offs, which change somewhat every year, with fresh deposition and denudation of material. The country on each side is low and flat; many small rivers may empty into the Yukon, concealed by the numerous islands. Low hills are seen in the distance, drawing together as we approach the Ramparts. From near Fort Yukon five snow-covered summits of the Románzoff range are visible.

When we enter the Ramparts the change is very great. Hills from 500 to 2,000 feet come close to the river, which is narrow, deep, and rapid, but without obstructions to navigation. The so-called Rapids are described in another part of this volume.

Left Bank.	*Right Bank.*
Mouth of the Tseétoht River to the mouth of the Whymper River (named by Captain Ketchum in his sketch map; Indian name Yúkutschárkut), around a large bend, 28 miles.	Mouth of the Dall River to the mouth of the Tseétoht River in the Ramparts, 33 miles.
Mouth of the Whymper River to the Rapids, 50 miles.	
Rapids to the mouth of the Tananáh at Nuklukahyét, 30 miles, leaving the Ramparts a few miles above Nuklukahyét.	

The Tananáh River enters the Yukon in lat. 64° 07′ N., and lon. 150° 08′ W., and is entirely unexplored. No white man has dipped his paddle into its waters, and we only know of its length and character from Indian reports. They inform us that it flows from the eastward, that some of its head-waters are not far from Fort Yukon, and others not distant from the upper Ramparts of the Yukon above the fort. The largest trees brought down in the spring freshets come from this river; its banks are said to be high and mountainous, and its course marked by rapids and cascades. The length is estimated at two hundred and fifty miles. The name Tananáh means River of Mountains, and it has long been distributed in various parts of Russian America

on the old maps, under the name of the River of the Mountain Men. The Hudson Bay men called it the Gens des Buttes River.

Left Bank.

From the mouth of the Sitzikúnten to Nowikákat Harbor, 65 miles. (The Nowikákat River [112 miles long] rises in the Kaíyuh Mountains, near the sources of the Ínnoko or Shágeluk, and the Soonkákat Rivers. It flows northeast along the base of the Nowikákat Mountains, and into a small cove or harbor, which opens by a narrow passage into the Yukon, and on which Nowikákat village is situated.)

From the mouth of the Kónaton to the mouth of the Soonkákat, 8 miles.

Right Bank.

From Nuklukahyét to the mouth of the Tozikákat River, 13 miles. From the Tozikákat to the mouth of the Sitzikúnten River, 18 miles.

From Nowikákat Harbor to the mouth of the Ukawútni River, 12 miles. From the latter to the mouth of the Melózikákat (Clear River), 35 miles.

The Melózikákat is about 75 miles long, and enters the Yukon from the north, with a wide bar at its mouth.

From Melózikákat to the Kónaton River, 33 miles.

From the mouth of the Soonkákat to the mouth of the Lebarge River (a name which I propose to substitute for the Indian name Miskúntl'kákat), 8 miles. From the Lebarge River to the mouth of the Koyúkuk River at the Sopka, 40 miles.

The Koyúkuk River enters from the north, and is a large stream, formed by the fusion of the Kuthlátno and Kutélno rivers from the west, and the Kotelkákat from the east. Its length, including tributaries, is estimated at one hundred miles. Other rivers, rising near it, fall into Kotzebue and Norton sounds.

Left Bank.

From Nuláto in lat. 64° 42′, lon. 157° 54′ W., to Wolasátux, 14 miles. From Wolasátux to the mouth of the Kaíyuh River, 32 miles.

Lófka's to the head of the great Shágeluk Slough, 30 miles.

Right Bank.

From Koyúkuk to the Nuláto River near the Nuláto trading-post, 22 miles.

Mouth of the Kaíyuh River to Lófka's, 50 miles.

Head of the Shágeluk to Anvík,

Anvík to the winter Leather Village, at the end of the Shágeluk, 27 miles. (The Anvík River is about 50 miles long, and from Kegiktówruk a winter portage is made in two days to the Anvík River.)

Mouth of the Chállik River to the Mission at Ekógmut, 43 miles. (Near the Mission is a small river by which the portage to the Kuskoqúim is made. Head of the South Slough from Milavánoff River, 8 miles.)

22 miles. (Head of the Shágeluk to the mouth of the Shágeluk or Ínnoko River, 18 miles. From that point to the end of the slough, at the summer Leather Village, 40 miles.) End of the Shágeluk to the mouth of the Chállik River, 26 miles.

From the Mission to the most southern part of the second Great Bend in the Yukon, 36 miles (lat. 61° 35′). From this point to the mouth of the Milavánoff River, 26 miles.

From the mouth of the Milavánoff River to Andréafsky Fort, 13 miles. Andréafsky to the head of the delta, 10 miles.

The length of the South Slough is about 64 miles, that of the Kúsilvak, or true Yukon-mouth, 50 miles; the Kwikhpák, 52 miles, and that of the Uphoón, 54 miles.

The distance from Fort Selkirk to Fort Yukon is thus about 392 miles. Thence to Nuláto, 549 miles,* and thence to the mouth of the Kúsilvak, 357 miles. From the Kúsilvak-mouth to the lower rapids on the Pelly (1,352 miles), or to the Lower Táhco rapids (1.513 miles), the river is navigable throughout for vessels drawing not more than four feet, and for a great part of its length for those drawing much more. The first shoals are at Anvík, the next near Nowikákat and near Fort Yukon; at some seasons more than four feet may be difficult to obtain. Elsewhere the depth may be estimated at from two to ten fathoms.

* The manner of our return voyage to Nuláto, steadily floating down stream night and day, formed an excellent check on the somewhat exaggerated estimates of distance made in going up. Our rate of progress, returning, could hardly have averaged less than one hundred miles a day, the rate of the current varying from seven to three knots an hour, while we kept carefully in the most rapid portion. Below Nuláto the current is less rapid, and the distance seems much greater on that account. Our estimate in going up was 630 miles, which was very close to Captain Ketchum's estimate of the previous year. Corrections reduced it to 550 miles. Captain Raymond's recent surveys confirm the near approximation to correctness of our mapping from distances and bearings.

The total length of the Yukon from the Kúsilvak-mouth to Lake Kennicott is about 1,800 miles. This may be too low an estimate if we take in all the curves of the channel, which I have not done; so we may safely estimate the total length of the Yukon with all its windings, at about 2,000 miles, of which three fourths are navigable for river steamers. In some places on the Lower Yukon one bank is invisible from the other. Above the Ramparts, including islands, the river is sometimes twenty miles wide. By its size and the important changes which it is always bringing about in Bering Sea, it is fairly entitled to rank as one of the largest rivers in the world. It is larger than the Ganges or the Orinoco, about the size of the Danube or the La Plata, and belongs to that great family of northern rivers, of which the Obi, Lena, Saskatchewan, and Mackenzie are the most prominent members.

At Kútlik several small rivers, draining the adjacent marshes, fall into the Uphoón. Not far beyond, the *Pastólik River*, followed by the *Pastoliák*, falls into the sea southwest of Point Román-off. North of the point the *Pikmiktálik River* drains a large extent of tundra, and has a village situated near the mouth. East of the Canal the *Golsóva River*, a small, shallow stream, empties into Norton Sound, and farther north the *Unalaklík River*, draining the Shaktólik Hills, the Ulúkuk Mountains, and the valley of the Yukon Portage. There is a large bar off the mouth, and in high water not more than four feet can be obtained as far as Ulúkuk. During the period of low water in the fall, only skin boats can ascend it.

Norton Bay receives the waters of a number of small rivers, which head among the hills between Nuláto and the coast. The principal of these are the *Inglutálik*, on which large numbers of fossil bones are reported, and the *Kóyuk River*.

Golofnína Bay is connected with a large lagoon which opens into Grantley Harbor by the extremely winding channel of the *Fish River*, which has one principal tributary, the *Kávi-áva-zak River*. The *Kúng-uk River* (Buckland River of English charts) falls into Escholtz Bay, Kotzebue Sound. At or near its source, among the Nuláto hills, is situated the village of Áttenmut, near the head of the *Seláwik River*, which falls into Seláwik Lake, emptying into Hotham Inlet. The *Kówak* and *Inland* rivers,

small unexplored streams, fall into the same inlet. They are prolonged far into the interior, to fill up the unexplored space on most maps.

A small river is said to enter Wainwright Inlet on the northern coast, but the only one of any size falling into the Arctic Ocean is the *Colville* in lon. 150° 35′. It is unexplored, but on many old maps the Yukon was represented as the upper portion of it, and in others, more recent, it is gratuitously represented as extending several degrees to the southward. This completes the list of the known rivers of importance in Alaska. On the opposite coast the principal rivers are the *Anádyr*, falling into Anádyr Gulf; the *Kamchatka*, emptying into a lagoon at Nízni Kamchatka; and the *Avátcha*, which enters the head of Avátcha Bay.

Ocean Currents. — The great currents which exist in the North Pacific and Bering Sea should not be left unmentioned. To these is due the mild climate of the southern portion of Alaska, and in fact that of the whole northwest coast of America, as compared with the northeast coast.

The great warm current, the Gulf Stream of the Pacific, is known to the Japanese as the *Kuro Siwo* or Black Stream, from its color as compared with the other water of the Pacific. It is called by geographers the Japan current. It splits on the western end of the Aleutian chain; one portion of it sweeps eastward, south of the Aleutians, and, striking the shores of the continent, is deflected southward. It brings a warm, moist atmosphere, which is condensed on the snowy peaks of the coast ranges, and causes the remarkable rainfall which characterizes the coast as far south as Oregon.

The other and smaller portion passes between the Commander's Islands and the end of the Aleutians, and northward through Bering Strait. Hence no ice floats southward through the strait from the Frozen Ocean, and I learn that the whalers in the spring have seen large masses of ice steadily sailing northward through the strait a knot and a half an hour, against a very stiff breeze from the north. In summer a small cold current passes southward along the coast of Kamchatka, but in May it would seem as if this was wanting. At that time the whalers follow the coast northward, as the ice melts close to it, before that to the east is affected. The vessel which, in this way, is the first to

pass East Cape is sure of plenty of whales, beside the spring trade.

The water on the west side of Bering Sea is deeper than that to the east. It would seem as if an ocean valley existed here, heading in Plover Bay; as in the latter place one hundred and one fathoms without bottom are reported between the heads, and fifty farther in. In the vicinity of the Shúmagin Islands there was in August, 1865, a strong current to the north and east, with a surface temperature of 56° Fahr. The currents through Únimak Pass are largely dependent on the tide, but run more strongly and for a larger part of the day into Bering Sea, than the reverse.

Through some of the narrow passages in the Aleutian chain severe tide-rips often occur, and vessels should be cautious in entering them.

Mountain Ranges, Peaks, and Volcanoes. — The high mountains of Alaska all lie south of lat. 65°. The *Coast* or *St. Elias Range* contains the highest peaks and most of the volcanoes. It extends along the whole northwest coast from California to the peninsula of Aliáska. The general trend is northwest. About lon. 142° W. it loses in a measure the distinctive characters of a mountain chain, and merges with the ranges which join it from the north and east, forming the *Alaskan Range*. That portion of this range immediately northwest of Cook's Inlet has been termed on some maps the *Chigmit Mountains*, from what cause I have not been able to discover. Back of the Coast range in the British territory, to the east, are many parallel ranges of hills and mountains, as yet slightly explored. The *Rocky Mountain* chain extends east of the basin of the Yukon, between it and the Mackenzie, as far north as lat. 64°. Here it bends westward, and, becoming broken, it passes to the west and south, combining with the coast ranges to form the Alaskan Range. To the north the country, though broken, elevated, and containing many ranges of hills, yet bears nothing (except the Románzoff Range) worthy of the name of mountains; that is to say, nothing which reaches the height of five thousand feet. The mountains which border on the Mackenzie, as described by Richardson, are rather the edges of a high and broken table-land than mountains; at all events, in the light of new discoveries, they must be regarded as a small and insignificant spur, instead of the prolongation of the main range. By

the discovery of this fact, the orographic law, that the coasts and principal ranges of continents have a general parallelism in their trend, is vindicated.

The old maps represent the Rocky Mountain range as reaching the Arctic Ocean in a line nearly parallel with the Mackenzie River. The trend of the mountains as thus laid down formed the only noteworthy exception to the general law above mentioned, acknowledged by all orographers. Many reasons induced a doubt of the correctness of these maps, and led to an investigation of the facts, which are as follows: The accounts of the Russians who had been in the region of the Nushergák and Cook's Inlet united in confirming the existence of a great range, continuous with that which forms the backbone of the peninsula of Aliáska. The watershed, or distribution of the rivers of the region to the north of this range, added confirmation. Two years' exploration in the valley of the Yukon showed that all the ranges of hills and low mountains had the same general trend with the great range to the south. Ketchum's explorations showed that the Yukon cut its way, nearly at right angles, through a great chain of mountains, which extended to the westward and eastward, and that, proceeding northward to a point a hundred and fifty miles southeast of Fort Yukon, the character of the country changed, becoming comparatively level and entirely free from high mountains. The furs from Fort Selkirk were taken down the Yukon, up the Porcupine, across to Peel's River, and up the Mackenzie, to the usual points, rather than one quarter of the distance across the Rocky Mountains to the Mackenzie. The Hudson Bay men at Fort Yukon agreed in representing the country between that point and the Mackenzie as comparatively even, though broken and hilly to the eastward. The character of the Porcupine River, surrounded by lakes and only obstructed by sandbars without rapids, forbids the idea that it intersects a great range of mountains.

The preconceived opinion that we should find a continuation of the western fauna of America on Norton Sound, such as exists south of Aliáska, was disproved by extensive collections. Birds (such as the Golden Flicker, the Waxwing, and Canada Jay) and fishes (e. g. *Esox estor*) hitherto unknown

on the west coast of America, abounded in the Yukon Valley. The characteristic western species were absent. South of Aliáska and these mountains the reverse was the case. Excluding Asiatic stragglers and water-birds, the fauna of the Yukon Valley was almost entirely Eastern Canadian. The truth of this is evident to the naturalist who may examine the catalogue of birds. These facts undeniably indicate that a continuous range of mountains exists,* which, like a great wall, retards the northern and western progress of the species of the western fauna, while the continuous table-land, to the north of the western curve of the ranges, offers no obstacles to the free westward migration of truly eastern species, to Bering Sea.

The smaller ranges worthy of mention are the *Bald Mountains*, on either side of which the Yukon takes its rise; the *Shaktólik* and *Ulúkuk* hills, near Norton Sound; the *Nuláto Hills*, between the Yukon and Norton Bay; the *Kaíyuh* and *Nowikákat* mountains (1,500 feet), east of the Yukon; the *Yukon Mountains*, a low range northwest of the Yukon; and the *Románzoff Mountains*, north of Fort Yukon, the only mountains in the Yukon Valley, north of the Alaskan Range, which bore snow all summer in 1867.

A low range of hills borders the Arctic coast, which has received many names. The southern portion of the Káviak peninsula contains a range of hills. The Aleutian Islands are simply the submarine continuation of the Alaskan Range.

A statement has been circulated, to the effect that the volcanic line of the coast ranges, the Aleutian and Kurile Islands, and the islands of Japan, is nearly or quite coincident with a Great Circle line. A glance at a map on which the Great Circles are laid down as straight lines, is sufficient to dissipate this error. A Great Circle line from San Francisco to Hakodadi strikes across the Pacific, and barely grazes the southernmost islands of the Catherina Archipelago.

The number of known volcanic peaks in Alaska, according to Grewingk, is about sixty-one, of which only ten show any symp-

* It is probable that the active volcanoes of Aliáska and their allies are of later elevation than the more inland portions of the Alaskan Range. The latter, while parallel in lines of elevation, and almost inextricably interlaced with the former, are probably of Triassic age.

toms of activity. The principal peaks, volcanic and otherwise, with their estimated heights, are as follows: —

Mount Calder, Prince of Wales Island,	9,000 feet.
Mount Edgecumbe, Kruzoff Island,	*2,855 "
Mount Crillon (on the continent),	13,500 "
Mount Fairweather, " "	14,000 "
Mount St. Elias, " "	? 16,000 "
Mount Wrangell, near the Copper River,	? 5,000 "
Redoubt Volcano, Aliáska Peninsula,	11,270 "
Iliámna Volcano, " "	12,066 "
Alai Volcano, " "	?
Chigínagak Volcano, Aliáska Peninsula,	?
Veniáminoff Volcano, " "	?
Pávloff Volcano, " "	?
Medvídnikoff Volcano, " "	?
Walrus Peak, " "	?
Mount Devastation or Isanótski, Únimak Island,	*5,525 feet.
Mount Shisháldin, Únimak Island,	*8,955 "
Thunder Mountain (Pagromnáya), Únimak Island,	5,525 "
Akután Peak, Akután Island,	3,332 "
Mákushin Volcano, Unaláshka Island,	*5,691 "
Bogoslóva Volcano,	1,000 "
Vsévidoff Peak, Úmnak Island,	? 3,000 "
River Volcano, " "	? 2,500 "
Koróvin Volcano, Átka Island,	4,852 "
Sítkin Volcano, Sítkin Island,	5,033 "
Tánaga Peak, Tánaga Island,	? 3,500 "
Peak of the Seven Craters, Semisopóchnoi Island,	3,000 "
Khústoff Peak, Amchítka Island,	1,873 "
Goréloi Peak, Goréloi or Burned Island,	? 8,000 "
Kúsilvak Mountain, Yukon Valley,	? 2,500 "
Ulúkuk Mountains,	1,500 "
Vesólia Sopka,	800 "
Koyúkuk Sopka,	1,000 "
Peaks of the Románzoff Mountains,	? 5,000 to 8,000 "
Mount Hohoníla,	1,000 "
Mount Bendeleben, Káviak Peninsula,	? 1,000 "
Mount Kennicott, Plover Bay, East Siberia,	*2,343 "
Volcano, Wrangell's Land,	2,480 "

* All altitudes without an asterisk are only approximate.

Area. — From calculations made by Fr. Hanemann of Gotha, and reduced to geographical square miles (in the ratio of 1 to 21.16), the following estimate of the superficial area of Alaska has been computed.

Islands of Bering Sea,	3,963.0564	G. sq.	m.
Aleutian Islands,	6,391.5896	"	"
Kadiák and Shúmagin Islands,	5,676.3816	"	"
Chugách and other islands,	1,031.7616	"	"
Alexander Archipelago,	14,142.9208	"	"
Total area of islands,	31,205.7100	"	"
Area of the mainland,	548,901.6148	"	"
Total area of Alaska,	580,107.3248	"	"

Maps of Alaska. — It is hardly necessary to state that the older maps of the territory are full of errors, especially in the interior. There is probably no part of America, of equal extent, of which less information is obtainable. A habit has obtained among map-makers of filling in unexplored territory with a network of lakes and rivers which are solely due to their ardent imaginations. This is especially notable in Arrowsmith's earlier maps of Northwest America, in the Russian maps which accompany Tikhménief's History of the Russian American Company, and in a more recent map of Alaska, published in San Francisco.

The older maps, except in most of the coast-line, are so uniformly erroneous that they need not be mentioned.

The only recent maps worthy of notice are the map published by the Coast Survey in 1866, and a second edition of the same published in May, 1867; Arrowsmith's map accompanying Whymper's "Travels in Alaska"; a map entitled "Map of Russian America, or Alaska Territory, compiled from Russian Charts and Surveys of the Western Union Telegraph Company, San Francisco, 1867, published by Britton and Rey"; and one from information principally furnished by the writer, essentially agreeing with that which accompanies this volume, published by Dr. A. Petermann in the *Geographischer Mittheilungen* for October, 1869.

The first was a compilation from the best obtainable information, with corrections of many old errors, and was still further

improved in the second edition ; but, at the time of its publication, data in relation to the interior was inaccessible, and consequently that part of the map is unreliable.

The second map, by Arrowsmith, contains several inexcusable errors, such as the position of Bésborough Island, the Mission, and Andréafsky Fort. He has also been guilty of the stupidity of restoring on the general map, which accompanies his Yukon map, the old error in regard to the delta, which Captain Smith disproved. Correct data, in regard to the coast-line and the positions of the forts on the Lower Yukon, has long been obtainable ; the carelessness shown in the construction of the map is a warning to future explorers to be careful into whose hands they put their information.*

The nomenclature of the map is also much confused, Indians and Innuit being confounded.

The San Francisco map is here noticed only because it pretends to be the result of the Western Union Telegraph explorations. The only points in which it differs from maps published long before the Telegraph enterprise was organized, are : the addition of a small accessory chart of Coal Harbor, Únga (from a survey by Captain C. M. Scammon, Lieutenant J. Davison, the writer, and other members of the expedition) ; the gratuitous introduction of a large number of lakes, generally situated where mountains should be ; the remarkably erroneous course laid down for the Yukon ; and the general contradiction in all important points of the Western Union Telegraph surveys.

The map which accompanies this volume was derived from the following sources : —

The coast-line, and many particulars in regard to the southern portion of the territory, from the United States Coast Survey. The head-waters of the Yukon, Stikíne, and Liard rivers, from a

* It will be observed that Whymper says (p. 201), "With many windings the general direction to Fort Yukon (from Sáccatalóntan) is northeast magnetic." Now, if this course be laid down with the necessary correction for variation, which rapidly increases as we go eastward, it will bring Fort Yukon far to the north and east of the point where it is laid down on the accompanying map. The corrections for variation have not been made on Arrowsmith's map, which accompanies Whymper's book ; indeed, the course of the river, as there charted, is about east, 15° north *true*, from Sáccatalóntan, instead of northeast *magnetic ;* while the variation is to the eastward, and the true course varied from 30° to 60° north of the magnetic course. Such work is more than reprehensible.

photographic copy of a manuscript map (No. 4) drawn under the direction of George H. Mumford, Esq., Western Union Telegraph Company, in November, 1867, from surveys, partly astronomical, of Messrs. Pope, Butler, Scoville, and other explorers of the Western Union Telegraph Expedition.*

The course of the Yukon from Fort Yukon to Nuláto, from Ketchum's sketch maps and my own compass bearings and distances, carefully corrected for variation, and by means of all the known points. That Fort Yukon is above the Arctic Circle is determined by the statement of the voyageurs, that during midsummer the sun does not pass below the horizon for several days. This has been confirmed by later government surveys.

The course of the Yukon below Nuláto is from the Russian Admiralty charts, corrected from my own observations.

The delta of the Yukon, coasts of Norton Sound, and south to Cape Románzoff, from the reconnoissance of Captain Smith and Lieutenant Dyer, with some minor corrections from my subsequent explorations. The longitude of the shores of Norton Sound is not definitely settled, and will need revision. The Anvík portage, from notes of Captain Smith.

The country between Norton Bay, the Koyúkuk River, the Yukon, and Kotzebue Sound, from explorations by Messrs. Richard D. Cotter and J. T. Dyer, in 1866, and my own explorations in 1868. The topography of the Káviak peninsula, from a reconnoissance by Mr. W. H. Ennis and Baron Otto de Bendeleben.

The course of the Kuskoqúim, Nushergák, Suchítna, and Copper rivers, from Russian explorations and charts. It is to be regretted that astronomical observations were not made on the Yukon. This arose from circumstances beyond the control of the Scientific Corps. If any persons who contributed to the explorations here laid down are not mentioned, it is because further information is not accessible. The map as a whole can be re-

* That part of the same map relating to the Lower Yukon is very erroneous. Unfortunately I am unable to give the specific details of these explorations, as I have only had access to the unpublished maps, upon which the results had been delineated. The principal part of the astronomical observations are due to Mr. E. H. Scoville. That Frances Lake connects with the Pelly instead of the Liard, as on the old maps, was determined by later manuscript maps, furnished by officers of the Hudson Bay Company to the Telegraph explorers.

garded as approximate only, but it is believed that it approximates far more nearly to accuracy than anything yet published, and is thus far preferable to a state of total ignorance. All matter which was merely speculative and without definite authority has been excluded as far as possible. The nomenclature is phonetically correct, and corresponds with the rules adopted in this volume for the spelling of Indian and Russian names.

The field now open to Americans for exploration and discovery is grand. The interior everywhere needs exploration, particularly the great plateau north of the Yukon, the valley of the Kuskoqúim, and that of the Copper River. The Arctic Ocean, north of Bering Strait, has so far been unduly neglected. Wrangell's Land offers to explorers a more fruitful field than the well-trodden shores north of Hudson Bay. It is to be hoped that the liberality which has been extended toward Arctic discovery in the northeast will find a ready parallel in the requirements of more western exploration, and that American enterprise, there as elsewhere, may successfully continue to emulate that of Europeans.

NOTE. — While these sheets are passing through the press, additional information (from the original reports of the explorers on the Stikíne, which were not previously accessible) shows that Fort Mumford and Lakes Kennicott and Ketchum are more to the northwest than they are placed on the accompanying map. Hence the upper forks of the Táhco are somewhat shorter than here represented, but otherwise they are correctly laid down.

Information from Mr. Davidson also shows that the Chilkáht River enters Lynn Canal on the west instead of the east side of Observatory Point, and that the river of the Indian Portage enters the Táhco below instead of above Lake Lebarge.

CHAPTER II.

A chronological history of the progress of exploration and trade in Alaska and the adjoining territories, from 1542 to 1868.

THE history of Northwest America is, almost without exception, the history of exploration and trade. Controlled for eighty years by a despotism in the shape of a trading company, politics have until recently had no part in its affairs. The authorities from which this chronology has been compiled will be found in the Appendix.

1542. Voyages of Coronado and Juan Rodriguez de Cabrillo, northward from Mexico.

1579. Sir Francis Drake, in a schooner of about two hundred tons, refitted in a harbor — probably that of San Francisco — in the month of July.

1592. Apostolos Valerianos, commonly known as Juan de Fuca, sailed from Mexico, and is supposed to have entered the Straits of Fuca and the head of Puget Sound.

1602. An expedition under Sebastian Vizcaino, sailed from Acapulco and examined the coast as far north as Cape Mendocino.

1646. The Russians, who had pushed their explorations eastward in Siberia as far as the Kolýma River, actuated by the spirit of trade rather than that of discovery, in this year attempted the first voyage east of the Kolýma. Several small vessels, under the direction of Isai Ignátief, found a shallow channel between the grounded ice and the shore, and reached a bay where they obtained walrus ivory by barter from the Chúkchees, after which they returned to the Kolýma.

1647. This success in trading induced others to follow Ignátief's example, and in June of the following year four small

1647. half-decked vessels sailed eastward from the Kolýma. An officer was needed to accompany them in order to look after the interests of the crown, and the Cossack Simeon Déshneff volunteered for this duty. One object of the voyage was to discover the Anádyr River, of which the Russians had received vague reports. The same year Michael Stadúkin was sent by land to explore an unknown river called the Pogítcha, and endeavor to persuade the natives to acknowledge themselves subjects of the Russian crown, and pay tribute. This undertaking was not successful. The expedition by sea was obstructed by the ice, and obliged to return.

1648. Not disheartened by the failure of the previous year, seven vessels left the Kolýma on the 20th of June. Four of them were disabled on an island off the mouth of the Kolýma. Three, commanded by Simeon Déshneff, Gerasim Ankúdinoff, and Feodot Aléxieff, respectively, passed on without accident. The season was uncommonly open, and the shallops successfully rounded the northeast extremity of Asia and entered Bering Strait. Ankúdinoff's vessel was lost on East Cape, but his men were taken on board by the others. On the 20th of September they had a difficulty with the Chúkchees, in which Aléxieff was wounded; soon after, the two boats were separated by the wind and saw each other no more. Driven by storms until October, Déshneff was finally wrecked, some distance southwest of Anádyr Bay, on the coast of Kamchatka. After wandering about for ten weeks, he arrived on the banks of the Anádyr, and his party supported themselves during the winter by the chase.

1649. On the return of summer they ascended the river, and in the fall built the post of Anadýrsk. Stadúkin again unsuccessfully attempted to find the Pogítcha River.

1650. Information was received from the natives that showed the identity of the Anádyr and Pogítcha, and during the summer an expedition under Simeon Motóra, and another under Stadúkin, arrived at Anadýrsk by land, guided by natives.

1651. Boats were constructed at Anadýrsk, and Motóra was killed in a battle with the natives. Stadúkin went toward Pénjinsk Gulf, and was heard of no more.

1652. Déshneff descended the Anádyr in his boats, and discovered a sand-bar, called the Kórga, at the mouth.

1653. This year he built a vessel, in which he proposed to send his tribute from Anadýrsk to Yakútsk by sea.

1654. On making another trip to the Kórga, he found a Cossack named Selíverstoff, who had arrived from Yakútsk, by land, to collect tribute. It was afterwards ascertained by Déshneff, that his companions in the voyage of 1648 had landed on the coast of Kamchatka and died of scurvy, or been killed by the natives. About this time, according to a tradition (first recorded in 1710), a merchant named Taras Stadúkin sailed from the Kolýma, and made a portage across the neck of East Cape with his vessel, being unable to double it on account of ice; he then sailed, following the coast of Kamchatka, doubling the peninsula, making the first discovery of the Kurile Islands, and finally arrived in safety at Pénjinsk Gulf.

1696. The country of Kamchatka had long been known by report to the Russians, who had visited Anadýrsk; but in 1696, Lukas Simeónoff Moróscovich, with a party of fifteen men, penetrated as far as a day's journey from the Kamchatka River, bringing back with him certain Japanese papers, which he found in the village on the Kamchatka River.

1697. Vladimir Átlassoff followed his example, and built a winter house (*szmówi*) on the Upper Kamchatka River. The Kamshadales for several years revolted against the tyranny of the Cossacks, who easily subdued them by their superior arms. The Cossacks lost no opportunity of inciting to hostilities, and then butchering, the unfortunate natives, so that in forty years the Kamshadales were reduced to a twelfth of their original numbers. They were loaded with taxes, and the *yássak*, or imperial tribute, was often raised tenfold by the avarice of the conquerors, who retained the surplus for themselves.

1701. The Yukágirs, a nomadic tribe, demanded assistance from the Russians against the hostilities of the Chúkchees. An expedition was fitted out and hostilities commenced, but the Russians were unable to force this brave people to pay tribute, deliver hostages, or acknowledge allegiance to the Russian crown.

1711. In January a Cossack named Peter Iliúnsen Popoff was sent to East Cape to endeavor to induce the Chúkchees to pay tribute. He failed in his object, but brought back an account of islands (the Diomedes) which lay beyond East Cape, and of a continent (America) which the Chúkchees reported beyond these islands. In the same year the Russians first invaded the Kurile Islands, and visited about the same time the uninhabited Shántar Islands in the Ochótsk Sea.

1715. The first sea-going vessel was built at Ochótsk, and the following year she made a voyage to the west coast of Kamchatka.

1720. Other vessels were built, and voyages were made, including one under Jévrinoff and Lúshin, to the Shántar Islands in 1720–21.

1725. Scientific men, desirous of further information in regard to the extension of Asia and America, turned the attention of Peter the Great to the matter. He took great interest in it, drew up the instructions for an expedition with his own hand, and delivered them to Admiral Apráxin, with orders to see them executed. A few days afterward, in January, 1725, he died; but the Empress, desiring to carry out all the plans of her deceased husband as closely as possible, ordered their execution. Captain Vitus Bering was nominated commander of the expedition, and Lieutenants Martin Spanberg and Alexie Chírikoff for his assistants. They were confirmed by the Empress and Senate, and left St. Petersburg on the 5th of February, but the men and equipment did not reach Ochótsk until the 30th of July, 1727.

1728. Two vessels, the Fortuna and the Gabriel, were built, and on the 20th of July, 1728, Bering sailed from the mouth of the Kamchatka River. He coasted along the shores of the peninsula, and on the 10th of August passed an island which they named St. Lawrence. Sailing through Bering Strait on the 15th of August, he arrived at Cape Serdze Kámen, where the coast trends to the westward. Here he considered that he had fulfilled his instructions and proved the separation of Asia and America. Being naturally timid, hesitating, and indolent, he determined to go no farther for

1728. fear of being frozen in, and returned through the Strait — strange to say — without seeing the Diomedes or the American coast, reaching the Kamchatka River on the 29th of September.

1729. He wintered at Nizni Kamchatka, and set sail eastward from the mouth of the river, June 5, 1729. His object was to discover the coast of America east of Kamchatka. Meeting with contrary winds, he turned back after sailing some sixty miles, and reached Ochótsk on the 23d of July, without having definitely fulfilled a single article of his instructions.

1730. He arrived at St. Petersburg, *via* Ochótsk and Yakútsk, March 1, 1730.

Meanwhile the chief of the Yakútsk Cossacks, Athanasius Shéstakoff, had volunteered to subdue the Chúkchees and Koriáks. His offer was accepted, and Captain Demetrius Pávlutski, with a squad of four hundred Cossacks, was ordered to join him. A quarrel took place between them, and each departed on the enterprise separately. In 1729 Shéstakoff took possession of the vessels which had been used by Bering, and sailed, in September, in the Fortuna, but was driven ashore by the winds. He continued on his way with only one hundred and fifty men, and on the 11th of March, 1730, he sent orders to a Cossack, Tryphon Krúpisheff, at Táviskoi Fort, to equip a vessel, double the peninsula of Kamchatka, and sail for the Chúkchee country, taking with him the navigator and civil engineer of the expedition, Michael Gwósdeff. After sending these orders he had a battle with the Chúkchees near Pénjinsk Gulf, March 14, 1730, in which his forces were routed and he was killed.

A boat was constructed out of the wreck of the Fortuna, and in September, 1730, Gwósdeff reached Anadýrsk. Here orders were received from Pávlutski to go to the mouth of the Kamchatka River and obtain provisions, which they were to take to the Chúkchee coast, where he expected to meet them.

1731. In the spring Pávlutski fought his way through the Chúkchee country to Cape Serdze Kámen, and thence returned to the Anádyr, without, however, inducing the indomitable Chúkchees to pay tribute. Meanwhile, Gwósdeff

1731. had sailed to the Chúkchee coast, but saw nothing of the Cossacks. They remained at Cape Serdze until a gale drove them eastward, where they found an island, and beyond it the shores of the continent of America. They met a native in a kyak, and sailed two days along the coast without being able to land. A storm came up, and they returned to Kamchatka. This completed the exploration of Bering Strait, which had been commenced by Déshneff and his companions.

1732. The information brought back by Bering excited great interest, and he was promoted to be a commander and his lieutenants to be captains. A second expedition was organized, and several scientific men volunteered to accompany him.

1733. In the spring the marine officers left St. Petersburg. The objects in view were the verification of former discoveries, the extension of navigation between Archangel and Kamchatka, and the exploration of the American coast eastward of the latter peninsula.

1738. It was late before anything was ready at Ochótsk for a voyage, and in June of this year Spanberg sailed with three small vessels to examine the Kurile Islands, and wintered in Kamchatka.

1739. The following year he sailed on an expedition to Japan, all of which much delayed the American expedition. Two vessels, the St. Peter and the St. Paul, were built at Ochótsk, and on the 4th of September, 1740, they sailed for Avátcha Bay.

1740. The previous autumn, Iván Jélagin, Bering's pilot, had been sent to Avátcha, and there built barracks and storehouses on Niakína Cove, calling the little settlement after the vessels, Petropávlovsk. Wilhelm Steller * and Louis de Lisle de la Croyère joined the party at Ochótsk in 1740, the former as surgeon and naturalist.

1741. They passed overland to Avátcha, where they arrived in the spring of 1741. Spanberg had returned to St. Peters-

* Georg Wilhelm Steller, born at Winsheim in Franconia in 1709, arrived at St Petersburg in 1734, was sent to examine the natural history of Kamchatka in 1738, accompanied Bering in 1741, and died of a fever, or was frozen to death, according to some accounts, in the town of Tiumen in Siberia, in November, 1746.

1741. burg. Bering, with Steller, in the St. Peter, and Chírikoff in the St. Paul, with Croyère, sailed from Avátcha on the 4th of June, 1741, in search of the American coast. On the 20th of June the vessels were separated by a storm, and did not meet each other again. On the 15th of July, Chírikoff anchored off the American coast, near Cross Sound. The mate, Abraham Deméntieff, and ten well-armed men were sent ashore in the long-boat. As they did not return, on the 21st of July, Sidor Sáveleff was sent, with several men, in the small boat, to their assistance. He also did not return, but on the next day two canoes came out filled with savages, who fled with loud cries to the shore as soon as they saw the Russians on the vessel's deck. Chírikoff had no boats, and, a west wind arising, he was obliged to put to sea again, and on the 27th of July sailed for Kamchatka. He saw the coast of various islands on the 20th of September. On the 8th of October they saw land, and on the 9th they entered the Bay of Avátcha. Of seventy men, Chírikoff had lost twenty-one, among whom was the naturalist, Louis de la Croyère, who died of scurvy on the 10th of October.

On the 18th of July, Bering saw land. On the 20th he anchored under an island. Between two capes, which he called St. Elias and St. Hermogenes, was a bay where two boats were sent for water and to reconnoitre. Steller was in one of these, and during his examinations he came upon numerous traces of the natives. With characteristic imbecility, Bering resolved to put to sea again on the next day, the 21st of July.

Sailing to the northward, the commander was confused among the various islands, and sailed hither and thither, occasionally landing, but making no explorations, and showing his total incapacity for the position he occupied. He took to his bed, and Lieutenant Waxel assumed the charge of the vessel. On the 29th of August he discovered the Shúmagin Islands, which were named after the first of the ship's company who died and was buried there. Driven by storms, perplexed by ignorance and anxiety, reduced by scurvy and bad water, they welcomed the sight of land on the 31st of October, and on the 6th of November, Waxel and Steller

1741. went ashore on Bering Island. They decided to take up their winter quarters there, and the crew, sick and well, were landed, and the vessel left at anchor. On the 29th of November she was driven on shore by a storm. Bering, from age and disease, had become totally incompetent, looking upon every one as his enemy. Shelter was provided in the gullies of the watercourses near the shore, and on the 8th of December Bering died.* The survivors sustained life on the flesh of the marine animals which were found on the island.

1742. The following spring a boat was constructed from the remains of the vessel. On the 10th of August they set sail, on the 25th they saw land, and entered the Bay of Avátcha on the 26th, casting anchor in the harbor the next day. The same spring, Chírikoff had cruised in search of Bering without success. He then returned to Ochótsk, and by way of Yakútsk to St. Petersburg, where he was made a captain commander, but died soon after.

1743. Bering's party returned to Ochótsk, and Waxel reached St. Petersburg in 1749.

The furs and skins which had been brought back by the sailors of Bering's company caused various expeditions to be fitted out in Kamchatka by the Russians resident there, in the hope of obtaining more by barter with the natives or by hunting. These traders were called, in Russian, *Promishlénniks*. Their vessels were small, many of them constructed of planks lashed to the timbers, and calked with moss. They were therefore called *shitiki* or sewn vessels. The traders were men of no education, who sailed usually by dead reckoning, and who were governed only by their base passions and the love of gain. Nevertheless, their voyages added much to the general knowledge of the islands between Kamchatka and America.

1745. Emilian Bássoff discovered the island of Attú, and another small one near it. On the 17th of September in the same year, Michael Nevódtsikoff, a native of Tobólsk,

* Veit (Vitus) Bering was born at Horsens in Jutland. Sailed to the East and West Indies, and afterward joined the Russian service. He was made a lieutenant in 1707, a captain-lieutenant in 1710, afterward promoted to be captain and commander.

1745. sailed from the mouth of the Kamchatka River in the shitik Eudoxia and discovered three islands.

1747. He returned to Kamchatka July 21, 1747.

1748. Rybínski explored the Nearer Islands.

1749. Nikífor Trapésnikoff sailed in August from the Kamchatka River and discovered a new island.

1750. A Cossack named Yágoff obtained the monopoly of hunting on the Commander's Islands from the government, on payment of the tribute and tithes. The effect of this was to urge other traders to the eastward.

1753. Trapésnikoff returned August 16, and sailed again in August, 1754, having discovered another unknown island.

1757. Trapésnikoff returned from his second voyage, and Iván Nikíforoff sailed as far eastward as Úmnak.

1758. In September, Simon Krasílnikoff and the indefatigable Trapésnikoff sailed in two vessels from Kamchatka.

1759. They reached Góreloi Island in September the following year, and wintered, in different parties, on the islands of Ámlia, Sítkin, and Átka.

1760. In September, a vessel called the Andrean and Nathalia, fitted out by Andrean Tolstoi and commanded by Maxim Lázeroff, sailed from Kamchatka, and wintered at Bering Island. Púshkareff sailed in the sloop Gabriel, from Bolshóya River, Kamchatka, July 31, 1760. He afterward joined forces with Krasílnikoff, who had lost a number of men in hostilities with the natives, in June, 1760.

1761. During the winter they all hunted on Séguam Island, and in the spring of 1761 Krasílnikoff returned to Kamchatka, while Púshkareff pushed on to Úmnak, where he met Trapésnikoff's vessel. These voyagers had committed many atrocities, and the long-enduring natives were already beginning to retaliate. In 1761, Lázeroff explored the islands which have since borne the name of Andreánoffsky, from the owner of the vessel.

Having passed Úmnak, Púshkareff wintered in False Pass, Aliáska Peninsula. He was the first to winter on the continent.

1762. In January, Púshkareff lost several men, and others soon after fell under the weapons of the outraged natives. These

1762. hostilities were excited by the outrages committed. In June they sailed for Úmnak, where they took two islanders as guides. Driven westward by tempests, they reached the coast of Kamchatka out of provisions. They had torn from their homes some twenty-three natives, mostly women. Some of these were sent ashore to dig roots for the party. One of them, on returning to the vessel, was killed, for some fancied offence, by a sailor named Górelin. Overcome by anguish and despair, many of the other women threw themselves into the sea, preferring death to a life of such misery. By order of Púshkareff all the remaining natives, except the interpreter and a boy, were then thrown overboard. The perpetrators of these atrocities finally reached a small bay near Avátcha, September 25, 1762. In this year a vessel named the Trinity, commanded by Koróvin; another, the Zacharias and Elisabeth, under Drúsenin; one in charge of Medvédeff, with fifty men, and a fourth under Stephen Glóttoff, with forty-six men, sailed from Kamchatka on trading voyages to the islands. Medvédeff reached Úmnak, where he and his crew were killed by the exasperated natives.

1763. Drúsenin and all his men, except four (who reached Koróvin in 1764), met the same well-deserved fate on Unaláshka. Koróvin reached Unaláshka August 15, 1763. Here his men were divided into hunting-parties, many of which were cut off by the natives.

Glóttoff had wintered at Copper Island and sailed July 26, 1763. He passed Úmnak and discovered the island of Kadiák.* Here he wintered, but was obliged to use great caution, as the natives, less pliant than those to the westward, evinced many symptoms of hostility.

1764. In March the four survivors of Drúsenin's company, after great suffering, reached Koróvin. The party of the latter was reduced to twelve men, six of whom were Kamshadales. He lost his vessel, and proceeded in a bidarrá to Úmnak.

Glóttoff left Kadiák in May, 1764, and arrived at Úmnak July 3d. Here he found the bodies of a party under Prótosoff, who had all been killed by the natives, whom Glót-

* Originally called Kaniág by the natives, who called themselves Kaniágist or Kaniágmut. Kadiák is a corruption of Kaniág.

1764. toff attacked and defeated. He was soon joined by Korórvin's boat, and they wintered in Úmnak, exploring it pretty thoroughly.

During this year a secret expedition, under Lieutenant Synd, was organized at Ochótsk, by order of the Empress Catherine. Lázeroff arrived in Kamchatka. On the 25th of August, Iván Maxímovich Solóvioff sailed from the Kamchatka River in the Peter and Paul. He reached Úmnak September 16th, and there learned that a compact had been entered into by the chiefs of the natives on Úmnak, Akután, and Unaláshka to unite in driving the Russians from the islands, or to destroy them all.

1765. At Úmnak, Solóvioff was joined by Korórvin, who left Glóttoff in the spring of 1765.

1766. They proceeded to Unaláshka, where they wintered, exploring and hunting, and returned in July, 1766, to Kamchatka. Glóttoff reached home about the same time.

This completes the list of the discoveries of the Promishléniks. While we cannot but admire the undaunted energy with which these voyages were prosecuted, we must admit with abhorrence that they were prompted only by lust and avarice, and were accompanied by many of the most horrible and inexcusable atrocities which have ever disgraced the name of humanity. These outrages, unfortunately, did not end with the Promishléniks, but characterized the whole Russian administration of the territory until the recall of Baránoff. They were contrary to the express instructions of the government, but, as the Russian proverb has it, "Heaven is high, and the Czar is distant."

1767. The wreck of the government vessel at Ochótsk delayed Synd's expedition. In 1767 he left Kamchatka, sailed toward Bering Strait, passed St. Matthew and St. Lawrence, which he supposed to be many small islands, saw the Diomedes, and landed on the coast of America south of Cape Prince of Wales. He then returned along the Kamchatka coast, and reached Ochótsk in 1768.

1768. On $\frac{\text{July 23,}}{\text{August 4,}}$ 1768, Captain Krenítzin in the galliot St. Catherine, and Lieutenant Lévasheff in the hooker St. Paul, sailed from the Kamchatka River to explore the Fox

1768. Islands, by order of the Empress. Krenítzin, after touching at Bering Island, wintered at False Pass, and explored somewhat the coast of Aliáska.

1769. The St. Paul wintered in Unaláshka, and after fixing many points for the first time by astronomical observation, both vessels returned to Kamchatka in the fall of 1769.

Spanish settlements were made during this year at San Diego, and an exploring party by land reached San Francisco Bay.

1771. In May a number of Polish exiles, under Count Maurice de Benyówski, overpowered the garrison at Bolsherétsk, Kamchatka. They escaped to sea in a vessel which lay in the harbor, hoisted the Polish flag, and visited many parts of Bering Sea and the islands. With the furs which they had collected they finally arrived at Canton.

In this year Samuel Hearne made his explorations on the Copper-Mine River.

1772. Stephen Zaíkoff visited Aliáska, wintering in False Pass, and remained among the Fox Islands until 1778.

1774. The Spanish ensign, Juan Perez, sailed on an exploring expedition from Monterey on the 16th of June. On the 18th of July he discovered Queen Charlotte's Island, and, on the 9th of August, Nootka Sound.

1775. Captain Bruno Héceta in the Santiago, and Juan de Ayala in the Sonora, sailed northward from San Blas on the Californian coast in company with the schooner San Carlos, for Monterey, March 15, 1775. Lieutenant Juan Francisco de la Bodega y Quadra was soon put in charge of the Sonora, and Ayala took charge of the San Carlos whose captain was disabled. Leaving the schooner, the two exploring vessels proceeded northward to a small roadstead north of Cape Mendocino, where they anchored, calling it Port Trinidad. After leaving this point they sailed northward and anchored off Point Grenville, where seven men belonging to the Sonora were killed by the natives. Soon after the vessels were separated in a storm, and Héceta seized the opportunity to return to Monterey, while Bodega kept on his way.

Héceta discovered, on the 15th of August, the mouth

1775. of the Columbia River. He arrived at Monterey on August 30th. Bodega and Maurelle in the schooner advanced northward. On the 15th of August they saw land, and soon after discovered Mount Edgecumbe, which they named Mount San Jacinto. After making various explorations they sailed southward, discovering Dixon's Entrance, which they named Perez Inlet, explored Bodega Bay, and finally arrived at San Blas on the 20th of November.

1776. On the 12th of July, Captain James Cook in the Resolution, and Captain Charles Clerke in the Discovery, sailed from Plymouth, England, on a voyage of discovery in the North Pacific. Among the officers who accompanied this expedition were King, Bligh, Burney, Gore (of Virginia), Vancouver (as midshipman), and John Ledyard, of Connecticut, who was a corporal of marines.

1778. Solóvioff, Brágin, and others trading among the Aleutian Islands, committed many enormities among the natives.

Near the end of March, Cook anchored in Nootka Sound. Proceeding northward, he saw the mountain called San Jacinto by Bodega, and named it Mount Edgecumbe, which name it still retains. On the 4th of May he saw and named Mount St. Elias, and during the month explored Chugách Gulf and Cook's Inlet. Touching at Unaláshka, he entered Bering Strait in August, and traced the coast northeastward to Icy Cape, where he turned back. On his return he explored part of Norton Sound and Bay. On the 3d of October he touched at Unaláshka again, and then proceeded to the Sandwich Islands, where he was killed by the natives on the 16th of February, 1779.*

1779. Captain Charles Clerke, in command of Cook's Expedition, left the Sandwich Islands and reached Petropávlovsk on the 29th of April, 1779. He soon afterward sailed for Bering Strait, but the great accumulation of ice prevented any progress to the eastward. He returned to Kamchatka, and died of consumption, on board his vessel, off Avátcha Bay, August 22d. Lieutenant John Gore then took com-

* Captain James Cook, born at Marton in Yorkshire, October 27, 1728, made Master R. N. in 1759, Lieutenant in 1768, Commander in 1771, and Captain in 1775. One of the most distinguished and accurate English navigators.

1779. mand, and it was determined to return to England. The expedition left Kamchatka for England, *via* Canton, in October, 1779.

In this year Catherine II. issued a ukase, ordering the Aleuts to pay tribute (*yássak*), to assist all Russian trading companies, and to sell furs to them only.

On the 7th of February, 1779, a Spanish expedition, under Arteaga and Bodega, sailed from San Blas, visiting Port Bucarelli and Chugách Gulf, from which they sailed on the 7th of August for San Blas.

1781. Potan Zaíkoff visited and explored in detail Chugách Gulf, and wintered on Bering Island. Nagáieff discovered the mouth of the Copper River. Iván Gólikoff, Gregory Shélikoff, and other fur-merchants of Siberia and Kamchatka, formed an association for the more effective management of their business.

1783. Three vessels equipped by them sailed in August, 1783, from Ochótsk, under the command of Shélikoff. He occupied, in the name of Russia, several points on the island of Kadiák, and erected the first factory there. A vessel called the St. Alexius, commanded by Aléxieff Popoff, was attacked by the natives in Prince William's Sound or Chugách Gulf. Zaíkoff explored Captain's Harbor, Unaláshka, July $\frac{1}{13}$, 1783.

1785. The expedition of La Perouse,* planned by Louis XVI. in person, left France for the Pacific. James Hanna, from Macao, traded at Nootka Sound.

1786. In June, La Perouse saw Mount St. Elias, and anchored afterward in Litúya Bay. Here he lost two boats and twenty-one men, in the bore at the entrance, July 13, 1786. He described this bay in detail, and then sailed southward to Monterey, and left the American coast forever.

In this year, James Hanna made a second trading voyage to the northwest coast. He desired to establish trade between Macao and Kamchatka, and sent Captain Peters in the brig Lark to Petropávlovsk, where an arrangement was made with Shélikoff to exchange furs for Chinese and European goods with the English. On her return the Lark

* Jean François de Galloup de la Perouse, born in Languedoc, August 22, 1741, was lost at sea on this expedition in 1788. He was last heard from at Botany Bay.

1786. was lost on Copper Island, with nearly all on board, and the project was not carried out.

Several trading vessels from China, mostly manned by Englishmen, but under the flag of the East India Company, visited the northwest coast in 1786. Among them was one under Captain John Meares and another under Captain Tipping, from Calcutta. Captains Lowrie and Guise, from Bombay, sailed from Nootka to Chugách and back to Macao. Meares and Tipping visited the Aleutian Islands and Chugách Gulf. Meares wintered here, and lost many men by scurvy and lack of provisions. Tipping sailed, but was never heard from afterward.

The King George's Sound Company, a mercantile association for fur-trading, fitted out the ships King George and Queen Charlotte under Captains Portlock and Dixon, who left England in August, 1785. They reached Cook's Inlet in July, 1786, and wintered in the Sandwich Islands.

1787. Lébadeff Lastóchkin and Gerasim Príbyloff discovered the island of St. Paul on the 29th of June, and the succeeding year the latter discovered the island of St. George. He named them the Súboff Islands, but they are more generally known as the Príbyloff Islands. Samóyloff took charge of the factory at Three Saints' Bay, Kadiák; and Shélikoff sailed for Ochótsk.

In the spring of 1787, Portlock and Dixon visited Cook's Inlet and Chugách again. They found Meares at the latter place in very bad condition, with more than half his men dead of scurvy. Dixon then proceeded to Nootka, exploring as he went. Portlock passed the trading season between Chugách and Mount St. Elias, and rejoined Dixon in Canton.

Secret orders were sent from St. Petersburg by Lieutenant-General John Jacobi to Captain Délareff, Samóyloff, and others, in relation to taking possession of any new discoveries in the name of Russia.

In this year, Captain Berkeley, of the ship Imperial Eagle, discovered the Straits of Fuca.

Shélikoff, having arrived at Irkútsk, found that one of the Gólikoff brothers had been defrauding the association.

1787. A regular commercial bureau was therefore organized. On $\frac{\text{September } 27}{\text{October } 9}$, Shélikoff and Gólikoff received medals and portraits from Catherine II. in acknowledgment of their services. Shélikoff had been for nearly five years engaged in uninterrupted explorations and the establishment of trading-posts. During the whole of this period he had been accompanied by his wife Nathalia Shélikoff, a woman of remarkable intelligence and energy. Gregory Shélikoff, of Rylsk in Siberia, was a man of great energy, and thoroughly acquainted with his calling, but unscrupulous and grasping, never hesitating at any falsehood or outrage which would advance his interests.

1788. On the 1st of January, John Meares and William Douglas, supercargoes, sailed from Macao in the Felice and Iphigenia, Portuguese vessels, with captains of the same nation, but really under the sole charge of Meares. The Iphigenia sailed to Cook's Inlet, and passed the summer trading there and to the southward. Meares, in the Felice, went to Nootka where he erected a building, fortified it against the natives, and left part of his crew there to build a small vessel, while he proceeded to the Straits of Fuca. From that point he sailed in search of the Columbia River, which he failed to find. He then returned to Nootka, where the Iphigenia had arrived, and, taking all the furs, sailed to Canton, leaving the brig and the small vessel, which had been named the Northwest-America, to winter at the Sandwich Islands. Before Meares departed, the ship Washington, fitted out by a company of Boston merchants, entered Nootka Sound on the 17th of September, in charge of Captain Robert Gray. Soon after, the sloop Columbia of the same expedition reached Nootka, in charge of Captain John Kendrick, with Joseph Ingraham as second officer. The two American vessels wintered in the Sound.

The Spanish authorities, who claimed the sole right to navigate the Pacific on the northwest coast of America, became aware of the visits of the various traders, and for further information despatched vessels from San Blas, California, in charge of Estevan Martinez and Gonzalo Haro. This expedition left San Blas March 8, 1788, and entered

1788. Chugách Gulf on the 25th of May. In June, Haro visited Kadiák and obtained the desired information in regard to the Russian traders from E. Délareff, who had been left in charge there by Shélikoff. Haro rejoined Martinez in July, the latter having meanwhile explored the Gulf. They then sailed for Unaláshka, remaining there until September 18th, when they returned to California.

Two vessels were sent in this year, under Ismýloff and Béchareff, as far south as Mount St. Elias, and a Russian redoubt and trading-post was established at the mouth of the Copper River. Délareff determined astronomically the situation of Three Saints' Bay, Kadiák. Three thousand sea-otter skins were obtained by him in Cook's Inlet.

An earthquake caused a tidal wave, which passed from Aliáska to Sának Island, and created a great inundation in the island of Únga, during which many natives lost their lives.

On the $\frac{1}{13}$ October, 1788, Shélikoff received from the Russian government the monopoly of the fur trade in the Catherina Archipelago.

1789. The reports of the outrages committed by Glóttoff and Solóvioff having reached St. Petersburg, an expedition for inquiry and exploration was organized in 1785. This was put in charge of a timid and incompetent Englishman, Joseph Billings, who had acted as assistant to Bayly, the astronomer of Cook's expedition. Dr. Carl Merck, "a man combining an almost puerile timidity with extraordinary intelligence," accompanied him as naturalist. They arrived at Petropávlovsk from Ochótsk in 1788. On the 9th of May, 1789, they sailed from that port to Unaláshka, and afterward as far as Kadiák, where they wintered. Martin Saur, a German who acted as secretary of the expedition, collected much information in regard to the country and the natives.

Early in the year the Spaniards, determined to put an end to the encroachments of the English and other traders, equipped Martinez and Haro, who entered Nootka Sound May 6, 1789. Here they found the Columbia and the Iphigenia. Martinez immediately informed them of his in-

1789. tention to take possession of the Sound in the name of Spain, and, landing materials and artillery, built a fort on a small island near Friendly Cove, to enforce his instructions. Trouble arose between Martinez and Colnett and Hudson, two captains who had been sent from Macao by Meares under the English flag.* Finally, their vessels, the Princess Royal, the Argonaut, and the Northwest-America, were seized by Martinez. He sailed, with the vessels, cargoes, and some of the prisoners, for San Blas in November. Some of the prisoners were put on board the Columbia, to be taken by that vessel to China.

The American vessels had not been disturbed by the Spaniards. The Washington explored in June the whole east coast of Queen Charlotte's Island, which had not been visited by white men before, though Captain James Duncan had sailed through the strait which separated it from the mainland, in 1788. In a subsequent excursion from Nootka, the Washington explored the Straits of Fuca for fifty miles. Gray then returned, and met the Columbia bound for China, and made an arrangement by which Kendrick took charge of the sloop and remained on the coast, while Gray sailed for Macao and Canton † with the Columbia. Kendrick immediately returned with the sloop, and more thoroughly explored the Straits of Fuca, and made the first passage through them. In November, 1789, the schooner Fair American, Captain Metcalf, reached Nootka, and was seized by Martinez, but afterward released.

In this year Mackenzie descended the river which bears his name.

1790. Shélikoff organized a company, under the title of the Shélikoff Company, at Irkútsk, for the management of the fur trade and monopoly.

By a ukase, Catherine II. ordered the Aleuts to send a certain number of bidarrás every year, to hunt, and to sell all furs to Shélikoff's company, in consideration of which

* For particulars see Greenhow's History of Oregon and California, Chap. VIII.

† Gray reached Canton December 6th, and took on board a cargo of tea, with which he arrived in Boston August 10, 1790, having carried the United States flag round the world for the first time.

1790. the yássak, or tribute, was renounced by the Russian government. E. Délareff, a Greek, who had been long at Kadiák, was made Chief Director of affairs in the colony; and Alexander Baránoff, a sailor who had shown great energy in the service, was put in charge of the Kadiák and Cook's Inlet trading-posts. Baránoff had accompanied Shélikoff in 1783, and was a man of indomitable energy, destitute of scruples of any kind. He received secretly, August $\frac{14}{26}$, instructions as to the treatment of the natives and the occupation of new territory. He was appointed one of the board of directors for the colonies.

Billings left Kadiák * July 31, 1790, and sailed southeast as far as Chugách Gulf, where he was threatened by the natives. He then returned to Kamchatka, where he arrived October 14th.

The Spaniards sent an expedition under Lieutenant Salvator Fidalgo to establish a permanent post at Nootka and explore the coasts to the northward. He reached Chugách, and spent several months exploring there and in Cook's Inlet, returning to San Blas November 14, 1790. Lieutenant Quimper, in the sloop Princess Royal, explored the Straits of Fuca for the Spanish government. He returned to San Blas in August.

On the return of the Columbia the merchants of Boston fitted her out for a new voyage to the northwest coast, under Captain Gray. The brig Hope was also despatched in charge of Joseph Ingraham, former mate of the Columbia. These vessels were followed by the Hancock, Captain Crowell, the Jefferson, Captain Roberts, and the Margaret from New York under Captain Magee.

1791. On the 29th of June, Ingraham anchored in a harbor in the southeast part of Queen Charlotte's Island. He spent the summer in trading and exploring, and sailed in the fall for China. In the summer of 1791, Kendrick, in the Washington, purchased from the natives large tracts of land near Nootka Sound, and sailed for Macao. The Columbia ar-

* I have followed Sarýcheff's version. As the expedition was a secret one, the accounts differ, some saying that the expedition first sailed in 1790, but Sarýcheff's narrative is probably the correct one.

1791. rived in the Straits of Fuca in June, 1791. Gray explored much of the coast, including the Portland Canal, and returned to Clyoquot, near the Straits of Fuca. Here the crew built a small vessel, called the Adventure, and a post, which they named Fort Defiance.

On the 2d of June, 1791, Captain Alexandro Malespina, an Italian in the service of Spain, arrived on the coast near Mount Edgecumbe with two vessels. They explored the coast between Chugách and Mount Fairweather, and established a few points on the coast to the southward, returning to Nootka August 13, 1791.

The French ship Solide, Captain Étienne Marchand, visited Norfolk Sound and other parts of the coast in this year, and left the Straits of Fuca for Canton in the fall.

Shélikoff's first vessel, the Iván Predécha, was wrecked on St. Paul Island during the summer. He visited the island of Kadiák, and reported a population of 50,000, to enhance the supposed value of his discoveries. Explorations were made by Chaédikoff in the Aleutian Islands. Béchereff explored more thoroughly the Peninsula of Aliáska. Baránoff built a vessel called the Fenie, in Chugách Gulf, but she was not launched for three years.

April 16, 1791, Billings and Saryčheff sailed from Petropávlovsk, visiting Unaláshka, St. Paul, St. Lawrence, Áziak, and the Diomedes. They touched on the American coast near Cape Prince of Wales, and then anchored in St. Lawrence Bay on the Asiatic side. Saur gives an amusing account of the harsh treatment he received from the natives on account of his diminutive size. Billings and Saur left the vessel in charge of a Captain Hall, and pursued their journey overland to the Kolýma, August 4, 1791. A boat expedition was sent round to the Kolýma by sea to examine the shore, but we have no record of their success. Saryčheff and Hall sailed for Unaláshka August 13th, and wintered there, returning to Kamchatka in the following spring.

1792. The viceroy of Mexico equipped three vessels, in the spring of 1792, to continue the explorations. These were the corvette Aransasu, Lieutenant Jacinto Caamano; the schooner Sutil, under Lieutenant Dionisio Alcala Galiano;

1792. and another named the Mexicana, in charge of Lieutenant Cayetano Valdes. These vessels arrived from San Blas at Nootka in May, and departed; the corvette to look for the mouth of the supposed Rio del Reyes, and the others to explore the Straits of Fuca. Captain Bodega y Quadra also went to Nootka to treat with Vancouver,* who had been sent out from England to settle the difficulties at Nootka.

Vancouver, in the ship Discovery, with Lieutenant Robert Broughton, in the brig Chatham, sailed from England in January, 1791. He was instructed to explore the Straits of Fuca, survey the northwest coast from the 35th to the 60th parallel, and determine, with the Spanish Commissioner, what indemnity should be made to English subjects on account of the Nootka difficulty. He reached the west coast April 17, 1792. Sailed northward, and passed Cape Flattery without discovering the mouth of the Columbia. On the 29th of April he met Captain Gray in the ship Columbia, and after an interview he proceeded to survey the Straits of Fuca. At the same time, Gray sailed to examine the Columbia River, the mouth of which he had previously noticed. On the 11th of May he entered the mouth of the great river which he named after his ship. He sailed up stream about fifteen miles, and left the river on the 20th, after filling his casks. He then proceeded to Nootka, where the Hope had also arrived, and after communicating his discovery to Captain Quadra the two vessels sailed for Canton. Vancouver meanwhile surveyed the archipelago to lat. 52° 18′, meeting the two Spanish schooners in Admiralty Inlet after his return to the Straits of Fuca. Together they continued their explorations, and Vancouver passed into the ocean through Dixon's Entrance and returned to Nootka. Here he found the store-ship Dædalus, which brought his instructions from England, in charge of Lieutenant New. After some fruitless negotiations with the Spaniards (for which see Greenhow, Chap. XI.), he proceeded to the mouth of the Columbia, which was entered by the Chatham, which

* Captain George Vancouver, born about 1758, served on Cook's Expedition, surveyed the western American coast as related, and died, worn out with his labors, in May, 1798, before his report was quite finished.

1792. found there the brig Jenny of Bristol, which had left Nootka a few days before. Vancouver sailed to San Francisco Bay, where the Chatham afterward joined him.

In October, 1792, Mackenzie started on his journey across the continent.

Eústratus Ivánovich Délareff, Chief Director of the colonies, resigned his position to Baránoff, who had shown himself well fitted for the post. A settlement was made on St. Paul's Bay, Kadiák. A company of Russians, under Stepan Zaíkoff and Lébedeff Lastóchkin, established themselves in Cook's Inlet and Bristol Bay, claiming that this territory was not embraced in the grant of the Shélikoff Company.

1793. Vancouver reached Nootka May 20th from the Sandwich Islands and the southern coast. He spent the summer in careful explorations from the 51st to the 56th parallel. He sailed for San Francisco on the 19th of October.

Mackenzie descended the Frazer River, reached the head of the Gulf of Georgia July 20, 1793, and wrote in vermilion on the cliff, "Alexander Mackenzie, from Canada by land, the 22d of July, 1793." He returned by the route over which he came.

June 22/July 11, 1793, a ukase was issued by the Empress of Russia, authorizing the introduction of missionaries into the American colonies, and the shipment of convicts thither to teach the natives agriculture! Thirty of these agriculturists were settled on the peninsula of Kenái by Baránoff. Baránoff and Ismýloff were attacked by the natives when exploring the Gulf of Chugách; the latter were repulsed. The Russians lost eleven men in this encounter, of whom nine were Aleutians.

A serious conflict arose between Baránoff and the Lébedeff Lastóchkin Company concerning the right of hunting in Cook's Inlet.

1794. Vancouver, returning to his explorations, rediscovered Chírikoff Island, and entered Cook's Inlet April 12, 1794. He left it, after a thorough survey, in May, and explored the coasts and islands to the southward, reaching Chatham Strait, and finishing his work. He sailed from Port Conclusion August 22, 1794, and touched at Nootka and on

1794. the California coast on his way home. The explorations which he carried out have not been excelled by any other navigator, and were faithfully and thoroughly performed. The contending parties at Nootka abandoned the controversy, and in 1795 withdrew their forces, leaving the Sound to the natives and traders.

Archimandrite Jóasaph, Elder of the Augustin friars, was invited to settle in the colony by Iván and Michael Gólikoff and Gregory Shélikoff, who had returned to Siberia.

May $\frac{11}{23}$, Shélikoff was ordered to settle twenty convicts and their families near Cape St. Elias. In consequence, August $\frac{13}{25}$, two vessels sailed for Kadiák from Ochótsk. The first had one hundred and ninety emigrants, two overseers, and eleven monks on board. The other carried sixty hunters, two overseers, and a valuable cargo. There was great mortality among the colonists after their arrival. Shélikoff engaged seventy more men in Siberia, who were sent to the colony.

Baránoff sent an expedition to examine Bering Bay, which returned with 2,000 sea-otter skins.

The newly arrived monks and missionaries were obliged to work for their living, the Company refusing to support them in idleness. This state of things is said to have continued for nearly twenty years. On $\frac{\text{November } 25}{\text{December } 7}$, an arrangement was made to open a trade with China.

In this year the first complaint regularly entered by a native in his own name was made against the impositions and cruelties of the Company. The cries of the unfortunate Aleuts reached even to St. Petersburg, and on the death of Catherine II. the Emperor Paul seriously contemplated the withdrawal of the franchise from the Shélikoff Company. The expedition of Billings, in every other respect a failure from the incompetency of the commander, produced one good effect, which was the ventilation of the abuses practised by the traders.

1795. The Company extended its operations. Shélikoff forwarded thirty colonists. The settlement of New Russia was established on Bering or Yákutat Bay. Two small vessels, the Dolphin and the Olga, were built in Resurrection Bay. Rev.

1795. Father Jóasaph complained officially of Baránoff's conduct to the missionaries. He furthermore reported the conversion of 12,000 natives, which remarkable statement was naturally received with doubt at St. Petersburg.

The Company received a great blow in the death of its founder, Gregory Shélikoff, at Irkútsk, in the fall of 1795. His heirs carried on the operations without cessation, and his wife, Nathália Shélikoff, acted several years as President of the Company. As she could neither read nor write, she signed by her son, Iván Shélikoff, as proxy. In the winter, the first census of Kadiák showed about 1,800 adult native males, and the same number of females.

1796. The government having authorized a fort to be built on Yákutat Bay, a post and fortifications were erected, and a number of convicts, assigned by the Czar, were settled there. Shultz explored Litúya Bay and the head of Lynn Canal for the Company. An expedition under Samóyloff to the Copper River was cut off by the hostile natives. Kadiák was designated as the principal depot of the Company. Mount Edgecumbe is said to have emitted fire and smoke for the last time.

July $\frac{12}{31}$, 1796, Father Jóasaph was made a bishop by ukase. Father Juvenáti attempted to put down polygamy among the inhabitants of Kenái. He was afterwards killed while preaching to the natives near Iliámna Lake. The first Russo-Greek church was erected in Kadiák. A vessel called the Three Saints, commanded by Medvédnikoff, was wrecked in Bering Bay. Solómin, a native, complained to the Archimandrite of the breaches of faith and extortions of the Company.

1797. A company in opposition to that of Shélikoff was organized by Mýlnikoff $\frac{\text{July } 20}{\text{August } 1}$, 1797; by consent of Mrs. Shélikoff the two were consolidated. Archimandrite Jóasaph had returned to Irkútsk to receive his consecration as bishop.

1798. The Shélikoff United Trading Company organized at Irkútsk, adopted, January $\frac{3}{13}$, a series of regulations, and distributed them to interested parties. A new company, called the Átka Company, was formed by Ladýgin and others, in opposition to the United Company. Khwóstoff explored

1798. Admiralty Bay. Lastóchkin visited the Copper River with great caution. A factory was erected at Núchek Harbor. A Siberian trading vessel, in charge of Kíssileff, saw an island between lat. 43° and 44°, and lon. 160° and 165°. Various parties of traders interfered with the operations of the Shélikoff United Company.

1799. The Emperor Paul, at first strongly opposed to it, was induced to take the trading company under his protection. A charter for a new company was drawn up at St. Petersburg for the term of twenty years. This charter was issued on the 8th of June, 1799. It gave to the members of the old Company, under the name of the *Russian American Company*, the control of all the coasts of America on the Pacific north of lat. 55° N. They were required to organize settlements, promote agriculture, commerce, discovery, and the propagation of the Greek Catholic faith, to extend the Russian territory and influence on the Pacific as far as they could without trespassing on the territory of any foreign power. The capital of the Company was fixed at 98,000 silver rubles. The Aleuts were regarded as the servants or slaves of the Company. They were obliged to hunt and work at the command of its officers, and each adult was obliged to spend at least three years in the actual service of the Company. They were also forced to sell all their furs to the Company, at whatever price the latter chose to pay for them. The natives of Kenái and Chugách were obliged to pay an annual tribute of furs, though not to enter the Company's service. Baránoff was placed in charge of the operations of the Company in the colonies. The government of the territories was confided to the Chief Director in the colonies. No appeal could be made from him except to the Directory at Irkútsk. All regulations and appointments were made by the latter, and all questions decided by it, with the approval of the Imperial Department of Commerce. All persons and things in the territory were under the control of the Chief Director, who resided in Kadiák; other districts were ruled by inferior agents, chosen from among the Promishléniks, and accountable only to the Chief Director. The general regulations were just and humane, but the enforce-

1799. ment of them was intrusted to men with whom justice and humanity were always subservient to interest and expediency. Baránoff maintained for twenty years an absolute and despotic sway over the colonies. The orders of the Directory were often unheeded by him, and it was almost as easy for complaints to reach the Directory from another planet as from Russian America. He was a man of iron energy and nerve, coarse, unfeeling, shrewd, and enterprising. Among his inferior agents were men far more intelligent and humane than himself, but they were obliged to submit to his authority; any proposed improvements were in vain, if in his judgment they conflicted with the interests of the Company. The *morale* of the Company's servants may be judged from Krúsenstern's account, which says, "None but vagabonds and adventurers ever entered the Company's service as Promishléniks," "it was their invariable destiny to pass a life of wretchedness in America," and "few had the good fortune ever to touch Russian soil again." His remarks coincide in every particular with my own observations, though among the Creoles, naval officers, and general officers of the Company at Sitka it was my good fortune to meet many gentlemen of refinement, intelligence, and a high sense of honor and justice.

The Company's vessel Fenie (Phœnix), with the newly consecrated bishop Jóasaph, eighty-eight passengers, and a valuable cargo, in charge of Captain Shultz, was lost with all on board. Most of the ecclesiastics were on this vessel, and it is said that from this time to 1810 only one monk was left in the colonies.

The Company's vessel St. Demetrius was built in Resurrection Bay. Khwóstoff explored the Alexander Archipelago, and obtained a large number of sea-otter skins. The same good fortune attended an Aleutian party who visited George's Strait.

In consequence of their reports, Baránoff visited Sitka Bay in the Olga, with a large fleet of Aleutians in their kyaks, from Kadiák. Here one hundred and fifty of them died from eating poisonous mussels. Baránoff made one of the natives of the bay a chief, under the name of Medvéd-

1799. nikoff, and set about the construction of a fortified factory, which he called Fort Archangel Gabriel.

1800. This was completed in the following spring, when Baránoff took formal possession of the territory in the name of Russia. This proceeding was approved of by the Directory. He then returned to Kadiák. English and American vessels visited the colony with assorted cargoes, which the Russians were obliged to purchase altogether, good and bad as well, in order to prevent independent trade.

On the $\frac{19}{31}$ October, 1800, the Emperor Alexander ordered the general Directory to be transferred from Irkútsk to St. Petersburg; only a secondary bureau was left at Irkútsk.

1801. An issue was authorized of 7,350 shares of stock, each valued at 500 silver rubles.

A scarcity of provisions compelled the Chief Director to purchase supplies from English and American vessels. An American trader arrived at Kadiák in May. The vessels Petropávlovsk and Alexander Névski were built in the colony. Troubles arose from among the natives. The Thlinkets met on one of the islands of the archipelago, under their chief Kaniágin, to devise means of driving out the Russians. Baránoff was received with hostility by the natives of Kenái.

1802. The Emperor, Empress, and Grand Duke Constantine became shareholders in the Company $\frac{\text{March } 25}{\text{April } 6}$, 1802, to the extent of twenty shares each. The income of this stock was devoted to charity. In August, the Loan Bank of St. Petersburg was directed by a ukase to advance 250,000 silver rubles to the Company, at legal interest, for eight years.

The vessel Zacharias and Elisabeth was built in the colony.

An expedition under Khwóstoff and Dávidoff began scientific researches among the Aleutian Islands. The monopoly of the Russian and Siberian fur trade was secured by the Russian American Company. Active hostilities were commenced by the natives. In May the assembled Thlinkets of Sitka, under the chiefs who had been appointed by the Russians, attacked the Fort Archangel Gabriel and drove

1802. out the inmates. All the officers and thirty men were killed. Two days after the English captain Barbour arrived, and saved eighteen women, two Russians, and two Aleutians, who were hunted by the savages in the woods. He also appropriated the furs which remained unharmed in the storehouse, and demanded an exorbitant ransom from the Russians for the men. A few days after the American captain Ebbets arrived, and assisted the colonists against the natives. May 22d, Kúskoff's party of four hundred and fifty Aleuts, in their kyaks, was attacked in Yákutat Bay by the Thlinkets, who were repulsed. One Russian was killed and five wounded. June 20th a fleet of ninety kyaks, under Urbánoff, were attacked by the Thlinkets in Kake Strait. Only Urbánoff and twenty-two Aleutians escaped.

The American ship Atahuálpa, of Boston, discovered the mouth of the Stikíne River.

1803. An expedition under Krúsenstern and Lisiánsky was organized in St. Petersburg, and sailed in the ships Nadéshda and Neva in August. In March, the Imperial Financial Bureau was ordered to supply the Directory of the Company with 100,000 silver rubles, on demand, in such sums as might be required.

In the colony, Bázanoff explored the Copper River for a short distance. An expedition under Pétroff made further explorations near Yákutat Bay. An American named Owen, of the bark Eclipse, suggested to Baránoff the extension of the fur trade to California. Owen secured the right to purchase all the furs. In pursuance of this project an expedition under Swétzoff and Terakánoff was sent to the coast of Oregon, and returned with a valuable cargo. The Slávarássi Colony, on Yákutat Bay, was destroyed by the natives.

1804. On the 10th of June, 1804, Captain Krúsenstern, in the Nadéshda, left the Neva under Lisiánsky, at the Washington Islands, and sailed with Resánoff, the Imperial Commissioner, to Kamchatka, where he arrived in July. They attempted to open an intercourse with the Japanese, but failed, and returned to Kamchatka.

The Neva arrived in Kadiák July 13, 1804. Lisiánsky

1804. found that Baránoff had sailed for Sitka in the spring with four small vessels, one hundred and twenty Russians, and about eight hundred Aleutians in their kyaks. He therefore determined to sail to his assistance, and while detained by contrary winds at Kadiák made various surveys in the vicinity. He left St. Paul August 15th, and arrived in Norfolk Sound on the 20th. Baránoff arrived on the 19th, from a hunting expedition to Yákutat Bay, in the Yérmak. It was determined to attack the Thlinkets, who had fortified themselves on a rock near the old settlement, and now defied the Russians. On the 1st of October the Neva fired upon the fort, and, no reply being received, Baránoff and a party of Russians and Aleutians attempted to storm it. They were repulsed with some loss by the natives, who sallied and drove them to their boats. Baránoff was wounded in the arm. The next day the Neva opened fire on the fort with heavy guns, and on the 3d of October the natives hoisted a white flag. The fort was not surrendered, however, but was evacuated by the natives on the night of the 6th. They are said by Lisiánsky to have killed a number of infants and dogs, lest, by making a noise, they should give the alarm. The garrison was estimated to have been about eight hundred; the walls of the fort were so thick that the shot from the Neva had not penetrated them. It was defended by two cannon, and evidently evacuated because the occupants were out of ammunition. On the 8th of October it was burned by order of Baránoff. The Russians had ten or twelve killed, and several wounded.

On the 10th of November, Lisiánsky sailed for Kadiák, leaving Baránoff at Sitka. The Neva anchored, November 16th, in St. Paul Harbor, where she wintered. This vessel brought the first supply of medicine which reached the colony.

Resánoff, the Imperial Commissioner for the redress of grievances and the better regulation of the colonies, arrived from Kamchatka and wintered in Kadiák. The St. Demetrius was wrecked near Úmnak. Three vessels — the Maria, the St. Mary Magdalene, and the cutter Constantine — were built in the colony. On the 8th of October, Baránoff laid

1804. the foundations of the new fort at Sitka. He calls it the Fort Archangel Michael, and the settlement received the name of New Archangel. It was placed on the rocky point which had been so well defended by the natives.

1805. Lewis and Clarke descended the Columbia River, and wintered near the mouth of it.

On the 14th of June, Lisiánsky sailed from Kadiák for Sitka, where he arrived on the 22d, and whence, after making various explorations, he sailed, September 1st, for Canton. A hunter named Bukadóroff, employed by the Company among the islands, was attacked by the natives. The experiment of planting trees on the Aleutian Islands was tried this year. An expedition under Demiánkoff was obliged to leave Yákutat Bay by the hostile natives; in the storm which followed, thirty Aleutians were lost in their bidárkas. The natives attacked a settlement on the bay, and massacred the inhabitants; out of forty persons only thirteen escaped. At this time four hundred and seventy Russians were employed in different capacities by the Company.

The Imperial Chamberlain and Commissioner, Count Nikolai Petrovich Resánoff, inaugurated many useful reforms in the colony. Notwithstanding the unjust slurs of the usually accurate Greenhow, Resánoff was a man of unusual capacity, intelligence, and humanity. He organized a school at Kadiák under the name of the "House of Benevolence of the Empress Maria." His reforms and instructions much improved the prospects of the colony. He suggested a court in the territory for the trial of minor offences, and ordered that the Aleutians should receive their pay in money, and not in merchandise, as formerly. Printed parchment, with the Company's seal upon it, was used as a medium of exchange in the colony instead of coin.

In the autumn, Resánoff, urged by the scarcity of provisions, purchased the American ship Juno, of Rhode Island, and her cargo. This alone prevented a famine in the Russian settlements. He embarked in the Juno and sailed to San Francisco, where he hoped to make arrangements with the Spanish authorities for an annual supply of provisions. He examined the coast for a suitable locality for settlement, on his way.

1805. He was at first received with coolness by the Spanish Governor, Don Luis de Arguello. The latter had a daughter named Donna Conception, who was remarkably beautiful. The polished manners, manly beauty, accomplishments, and intelligence of Resánoff did not fail to make an impression on her. Resánoff was equally struck by the beauty, innocence, and simple grace of the Spanish maiden. He did not conceal his love, and they were betrothed. After this, it may be imagined that the old Governor listened to Resánoff's plans with more complacency, and an arrangement was entered into as he had proposed.

1806. He sailed for Sitka in June, 1806, leaving his betrothed with the assurance of his return as soon as he could obtain the imperial consent to the marriage. He arrived at Sitka safely and concluded his business. Too impatient to wait for the provision ships, and undertake another voyage around the world, he sailed for Kamchatka, intending to make the journey overland, through Siberia, to St. Petersburg.

Baránoff, who had looked with contempt on the reforms which Resánoff had instituted, lost no time in restoring, as far as he could, the old condition of things; and the same exactions and injustice continued to mark his whole administration. He concluded an agreement with Charles Campbell to share in a hunting expedition to California, which proved very successful. Several similar expeditions were fitted out, and among them one in the American vessel Windship. The first vessels were built at Sitka during this year. The volcano of *Joánna Bogoslóva* (St. John the Theologian) rose from the sea on the 1st of May.

In St. Petersburg the Government Financial Bureau was ordered to credit the Company to the extent of 200,000 silver rubles. A special flag (the Russian mercantile flag, with the addition of a double-headed black eagle) was granted to the Company, and naval officers were permitted to enroll themselves in the Company's service.

Simon Frazer, of the Northwest Company's service, established a trading-post on Frazer Lake, in lat. 54°.

1807. Resánoff, overcome by the exposure and fatigue of a Si-

1807. berian winter journey, died March 1st, at Krásnoyarsk in Siberia, on his way to St. Petersburg. So ended the life of the most intelligent and skilful reformer who had yet visited Russian America. It is related that his betrothed, who did not know of his death, at least for many years, continued constant and expectant, refusing many offers of marriage. Many years after, when Americans first settled in California, and she had become an old woman, she was still faithful to her love, and daily scanned the Golden Gate for his approaching vessel.

The sloop of war Diana, in charge of Golófnin and Ricord, left Cronstadt on a voyage to Kamchatka and Japan. The brig Sitka was built in Norfolk Sound by an American named Lincoln. The American vessel Derby, Captain Swift, arrived at Kadiák from Canton.

Seventy kyaks, in charge of Éremin, sent to Chatham Strait, were driven away by the Thlinkets.

The Company's ship Neva, Captain Hágenmeister, arrived at Kadiák from Ochótsk with provisions.

1808. Timotheus Tarakánoff and Búlegin visited the northwest coast in the Company's sloop St. Nikolai.

The frequent complaints which were made against Baránoff induced the Directory to send out Koch to succeed him as Chief Director in the colonies; but Koch died in Kamchatka in 1808, while on his way.

The Company's tender, Avos, was lost near Unaláshka. Kúskoff was sent, with two vessels loaded with rum, to trade at the mouth of the Columbia. In returning, the Kadiák arrived safely at Sitka, but the St. Nikolai was lost. Captain Erse, of the Mercury, made a contract with Baránoff to carry a hunting and trading expedition to the same place, and returned with a valuable cargo. In March an expedition of one hundred bidárkas, escorted by two armed vessels, endeavored unsuccessfully to induce the Thlinkets to trade with the Russians.

A conspiracy, headed by Náplakoff and Popoff, was divulged by Leshínski. The plan was to kill Baránoff, take one of the vessels and provision her, and sail with a number of women to some of the South Sea islands. The conspir-

1808. ators were arrested, and two years afterwards Baránoff received instructions to judge them in the colony, without any public demonstration. It may well be doubted if his justice was tempered with mercy.

A proposition was made to Spain, by the Directory, to purchase a small piece of land in California, suitable for an agricultural colony. It was, however, rejected.

1809. A new conspiracy among the natives to destroy the Russians was revealed by a native woman. An application was made to the Directory by thirty-seven Russians, who desired to settle permanently in the colony. Wasílieff described the west coast of Baránoff Island, and several of the adjacent islands.

Peter Shýdekin, a native, renewed the protest against the exactions of the Company. The Thlinkets attacked a hunting party among the islands. The Discovery, 306 tons, and the Chírikoff, 120 tons, were built by Lincoln at Sitka.

1810. John Jacob Astor formed an association in New York under the name of the Pacific Fur Company, and fitted out the ship Tonquin, Captain Thorne, for the mouth of the Columbia River. He had the previous year despatched the ship Enterprise, Captain Ebbets, which arrived in Sitka in July, 1810.

Captain Wasili M. Golófnin reached Sitka in the sloop of war Diana, June 10th. He brought a priest, the first who had arrived in the colony since the wreck of the Phœnix.

A ship and brig were built at Sitka, making seventeen vessels constructed in the colony since 1799.

In May an expedition, under Kúskoff, among the islands, was obliged to return, from the hostility of the natives, who were assisted by Captain Gale, of an American trading vessel. Eight of the Aleutians were killed. The government vessel was allowed to take the furs to Ochótsk from the colony. A party of Russians on St. Matthew Island were nearly all starved to death during the winter, by the disappearance of the sea animals, on which they relied for subsistence.

Ricord and Khlébnikoff explored and named the Shélikoff Strait, between Aliáska and Kadiák.

1811. In January, Mr. Astor despatched the second detachment of traders, under Wilson P. Hunt, to descend the Columbia River. On the 24th of March the Tonquin arrived at the mouth of the Columbia, and the settlement of Astoria was built. In October the ship Beaver, Captain Sowles, left New York with another party of traders for Astoria. An agent was also sent to St. Petersburg to negotiate with the Directory of the Russian American Company.

In January, Kúskoff, on the second expedition to California, was refused water by the Spanish authorities at San Francisco. He therefore removed his vessel to the northward, and bought a small tract of land from the natives on Bodega Bay. A river falling into the bay was named the Slaviánka. October $\frac{4}{16}$, a convention between John Jacob Astor and the Russian American Company was approved by the Emperor Alexander I. Astor agreed to furnish provisions and supplies at fixed prices, and to take pay in furs from the Company. They were to mutually assist each other against smugglers, and respect each other's hunting-grounds. Astor was to take the Company's furs to Canton at a fixed price for freight, and sell them on commission. Both agreed not to sell intoxicating liquors to the natives. This arrangement was broken up by the subsequent war between England and the United States. The ship Tonquin was attacked by the natives near the Straits of Fuca, and blown up by those on board.

David Thompson, of the Northwest Company, descended the north branch of the Columbia to Astoria.

1812. David Stuart, of the Pacific Fur Company, accompanied Thompson on his return, and established a trading-post on a branch of the Upper Columbia. The Beaver arrived at Astoria on the 5th of May.

Hunt and his party, after great sufferings, reached Astoria early in the year; many of them had perished from destitution and privation. Hunt sailed for Sitka in the Beaver, and concluded negotiations with Baránoff, which were somewhat interfered with by the potations of the latter. Hunt then sailed for the Sandwich Islands, and the Beaver proceeded to Canton.

1812. The first Russian settlement in California was made on Bodega Bay by Kúskoff. This was done with the concurrence of the Spanish Government, though against the wishes of the Roman Catholic missionaries. On the 30th of August, Kúskoff removed the settlement to a hill one hundred and ten feet high, near the Slaviánka River. This was named the Russian (*Ross*) Settlement, and the inhabitants were principally devoted to agriculture and drying the meat of the wild cattle. Wheat was raised here and sent to Sitka, and a small trade was carried on with the natives. The Spaniards regarded it with a great deal of hostility, and interfered with the operations of the Russians as much as possible.

1813. Robert Stuart, who had left Astoria when Hunt sailed for Sitka, reached New York in the spring, after a severe journey across the continent. In June the ship Albatross, of Boston, arrived at the Sandwich Islands, bringing the news of the war with Great Britain, and also that the Beaver was blockaded in Canton by a British vessel. Hunt sailed in the former for Astoria, and then proceeded again to the Sandwich Islands after a vessel to convey the Pacific Company's property to a place of safety.

Meanwhile a British squadron had been sent to destroy the settlement at the mouth of the Columbia River, and Mactavish, of the Northwest Company, arrived at Astoria to meet it. A sale was effected by the agent of the Pacific Company, by which the property was transferred to the Northwest Company for $58,000, on the 16th of October, 1813. A short time after, the British sloop of war Raccoon arrived to destroy the American post, and, finding it was sold, formally hoisted the British flag and changed the name to Fort George. The ship Lark had been despatched to Astoria in March, but was wrecked on the Sandwich Islands.

Baránoff's star still continued in the ascendant. The ship Neva, Captain Podúshkin, from Ochótsk, was wrecked near Sitka on the $\frac{9}{21}$, of January. But twenty-five of the crew were saved, while Bárono-wólokoff, who had been sent to supersede Baránoff, was lost with thirty-seven men. The Company's vessel, Alexander Névski, was wrecked on the Kurile Islands, but no lives were lost. The Thlinkets, while

1813. endeavoring to excite other natives against the colony, were attacked and defeated. The Company's vessel Suwarrow arrived with the annual supply of provisions from St. Petersburg, in charge of Michael Petrovich Lásareff.

1814. In February, Hunt, in the brig Pedler, arrived at Astoria from the Sandwich Islands. After closing the concerns of the Pacific Company he embarked for Canton. On the 24th of December the treaty of peace between the United States and Great Britain was signed at Ghent.

A special commission for the examination of the affairs of the Russian American Company was ordered at St. Petersburg.

Baránoff, preserving in his old age the audacity of his youth, was, however, already less fortunate in his undertakings. He purchased three American vessels, — the Bering, the Trevor, and the Ilmen. The Trevor proved unseaworthy. Anxious to establish a trade with the Sandwich Islands, and well aware of their growing importance, Baránoff sent the Bering to negotiate with the native monarch, at his invitation. The vessel was lost on Atuia Island of the Sandwich group.

1815. On the 18th of July, 1815, Mr. Monroe, Secretary of State, announced to the British representative at Washington that the United States intended to reoccupy immediately the post of Astoria, in virtue of the first article of the treaty of Ghent.

The brig Rurik was fitted out by the liberality of Count Románzoff, Counsellor of State. She sailed from St. Petersburg early in the year, in charge of Lieutenant Otto von Kotzebue,* accompanied by Choris, Escholtz, Chamisso, and other *savans*.

An expedition in the Discovery induced the Thlinkets to trade for the first time since the massacres. The price paid for furs was raised in favor of the hunters, the old rate being very low. Intercourse with the Sandwich Islands was again attempted. Dr. Elliott, an American, sent on the Ilmen to the Ross Settlement, was seized and held prisoner as a Russian spy, by the Spanish authorities.

* Son of August Friedrich Ferdinand von Kotzebue, the celebrated author. He was born at Revel, December 19, 1787, and died there February 13, 1846.

1816. Kotzebue left Petropávlovsk, in the Rurik, July 18th, landed on St. Lawrence Island July 27th, passed through Bering Strait on the 31st, and on the 3d of August entered and proceeded to explore the Sound which bears his name. He left it on the 14th, passed a little way to the northward, and then sailed for Unaláshka.

The hunting during this year was unfortunate and unprofitable. Explorations north of Cook's Inlet were ordered by the Company. The vessel Mary Magdalene was wrecked near Ochótsk, but the cargo of furs was saved. Baránoff sent the vessel Isabella on a voyage to the Philippine Islands. Father Sólokoff arrived at Sitka from Moscow, and took charge of the colonial churches. The keels of eight vessels were laid during the year. Hágenmeister sailed from Cronstadt with two vessels, September 3d, for the colonies.

1817. Captain Biddle, in the sloop-of-war Ontario, was sent to the mouth of the Columbia. Kotzebue visited the Aleutian Islands. The schooners Platoff and Baránoff were built in the colony.

On $\frac{\text{October } 22}{\text{November } 1}$, the fourth expedition from St. Petersburg with provisions arrived at Sitka in the Kútusoff and Suwarrow. Baránoff, feeling that the chills of age were cooling the current of his blood, worn out with twenty-seven years' service to the Company, voluntarily offered his resignation in December.

Golófnin's second expedition with Lütké, Wrangell, and Étolin, was organized in St. Petersburg.

Camille de Rocquefeuil entered on his journey round the world, in which he visited many parts of the northwest coast.

October 6th, Astoria was delivered to J. B. Prevost, agent for the United States, by the captain of the British frigate Blossom. Alexander A. Baránoff sailed for Batavia from Sitka in the ship Kútusoff.

1818. January $\frac{11}{23}$, Captain Leontius Andriánovich Hágenmeister assumed the duties of Chief Director of the colonies. February 20th he ordered that the hunters should receive an annual salary instead of being paid in merchandise as formerly. He was obliged to use severe measures to restrain the dep-

1818. redations of the natives. An American vessel was bought and named the Golófnin. June $\frac{2}{20}$, Vasili Michaelovich Golófnin, Imperial Commissioner for the redress of abuses, arrived in Kadiák. On the 3d of December, Hágenmeister resigned in favor of Lieutenant Janóffsky, and returned to Russia. Golófnin was instructed to report on the state of the Russian territories in America.

Ústingoff, Kórsakoff, and Kólmakoff were sent to examine the shores of Bristol Bay. Kórsakoff crossed Aliáska from Cook's Inlet on foot, examined the coast northeast of it, left a party at Nushergák and travelled along the coast until he met Ústingoff's vessel, which took him round Cape Newenham, and into Kuskoqúim Bay. Winter coming on, he returned to Nushergák, where Kólmakoff had built a fort, which has been kept up ever since. Here he wintered.

In this year the spirit of enterprise, dormant in England since the day of Cook and Vancouver, appeared to awake. The Arctic expeditions of Ross, Franklin, Parry, Richardson, and Back are too well known to need explanation. None, however, visited the North Pacific.

1819. The exploring vessels Discovery, Good Intent, Western, and Peace, fitted out at St. Petersburg for a voyage of discovery, under Wasílieff, Shíshmareff, Bellingshausen, and Lázereff.

Klimóffsky attempted to explore the Copper River. Ústingoff described Goodnews Bay. Janóffsky made official visits to Kadiák, Unaláshka, and the Príbyloff Islands. A brig called the Búldakoff was built in the Californian settlement. The Spanish schooner Fortuna, discovered ashore, with seven natives of the Sandwich Islands on board, was taken as a prize by the Company's vessels. On the $\frac{16}{28}$ April, Captain Alexander Andréavich Baránoff died at Batavia on his way home to Russia. He was about eighty years old, and is said by Denys to have died without leaving any property, in spite of his long and active career.

Golófnin's report having reached St. Petersburg, the Emperor determined to put an end to the mismanagement of the colonies, and curb the exactions of the traders. On the 8th of July, regulations were put in force by which the

1819. Chief Director became directly responsible to the crown for any misdemeanor, and the condition of the colonies was greatly improved. The death of Baránoff rendered the introduction of these reforms less difficult, and the subsequent direction of the colonies has been generally committed to honorable and enlightened officers, under whose guidance the abuses, formerly prevailing to so great an extent, have been removed or much abated.

In 1819 the Company had settlements on five of the Aleutian Islands, four on Cook's Inlet, two on Chugách Gulf, and one on Baránoff Island, Sitka Bay.

1820. Captain Murávieff succeeded Janóffsky as Chief Director of the colonies. The Borodino arrived at Sitka under Captain Ponáfidin with merchandise from Russia. Schmidt was appointed Director of the Ross Colony. The bay of Bodega had received the name of Románzoff, from the Russians. The Ross settlement, according to Belcher, presented a quadrilateral of twenty-five metres in length. It contained houses for the Director and officers, an arsenal, a barrack for the men, storehouses, and a Greek chapel surmounted with a cross, and provided with a chime of bells. The stockade was four metres in height, pierced with embrasures furnished with carronades. At opposite corners were two bastions, two stories high, and furnished with six pieces of artillery. The gardens were very extensive, and large quantities of wheat were raised, and sent to the northern establishments.

Kólmakoff explored the Kuskoqúim River. The expedition under Wasílieff arrived in the North Pacific. The Discovery went to Petropávlovsk ; the Good Intent visited the Aleutian Islands, afterwards passing through Bering Strait as far as Icy Cape, and, returning, described the island of Núnivak. Dókhteroff sailed for the colonies from Cronstadt.

The first regularly resident physician was settled in the colony. In this year, Wrangell and his party commenced their explorations in northeastern Siberia.

1821. $\frac{\text{September } 23}{\text{October } 5}$, the charter of the Russian American Company was renewed for twenty years by the order of the Emperor. The Senate, by ukase, reorganized the Company. The Emperor also issued a ukase, in which the whole west coast of

1821. North America, north of the 51st parallel, and the east coast of Asia north of 45° 50′, was declared Russian territory, and foreigners were prohibited from approaching within one hundred miles of the coast, except when in distress. The British government protested against this decree as soon as it was issued, and the United States did the same as soon as official information of it was received from the Russian government. The Russian authorities sent cruisers to enforce the ukase, and the brig Pearl, of Boston for Sitka, was seized. The result was the convention between the United States and Russia in 1824. The vessels sent to the west coast by Russia were the sloop of war Apollo, under Tulúbieff, captain of the first rank; and the brig Ajax, under Philatoff, captain of the second rank. The Ajax was wrecked on her way out, and, Tulúbieff dying, the command of the Apollo fell upon Lieutenant Krúshchoff (or Krútzoff).

The brigs Rurik and Elisabeth, under Klóchkoff and Kislakóffsky, arrived in the colony, with merchandise from Russia, on the 5th of September. They brought three ecclesiastics.

1822. The exploring expedition under Kramchénko, Étolin, and Wasílieff sailed in the ships Golófnin and Baránoff. They examined the coasts of Norton Sound, Bristol Bay, and the island of Núnivak, describing Golofnína Bay and Golovín Sound. The expedition continued during two years. Shabélsky visited the colonies. Captain-Lieutenant Andreas Petrovich Lázereff and M. P. Lázereff, captain of the second rank, sailed for the colonies and the Californian coast in the frigate Cruiser and the sloop Ladoga. They returned to St. Petersburg in 1824.

1823. Lieutenant Otto Von Kotzebue sailed on his second journey round the world in the sloop Enterprise.

The Nearer Islands, which, under the name of the Átka District, had been included in the government of Ochótsk, were surrendered to the Colonial Direction.

Father Frument Mordóffski was sent as missionary to Kadiák. The Ladoga visited Sitka in November. Hogs were placed on a barren island near the Chérnobour Reef. Kramchénko visited Yákutat Bay.

1823. The calling of a convention, to settle the boundary question between Russian and American territory on the west coast, was made the occasion, by the President of the United States, for a declaration of the Monroe doctrine, which delayed a settlement.

1824. The convention between the United States and Russia was signed at St. Petersburg, April $\frac{5}{17}$, 1824. It provided that the North Pacific should be open to citizens of both nations for fishing, trading, and navigation, except that the trading-posts of either of the contracting parties should not be visited by subjects of the other party without the consent of the officer in command. The Russians were not to make any settlements south of latitude 54° 40′, nor the Americans any north of that parallel. It was provided, that, at the end of ten years, the liberty to navigate the Russian waters and trade with the natives might be abrogated by Russia, and in no case were arms, ammunition, or liquor to be sold to the natives. The brig Pearl was released, and the owners indemnified. Lieutenants Chístakoff and Murávieff sailed in the Company's ship Helen from Cronstadt for the colonies. Kotzebue reached Sitka August $\frac{10}{22}$, in the Enterprise. Meek and Blanchard, American traders, arrived at Sitka from Boston. Krúshchoff explored in the Alexander Archipelago. Father Innocentius Veniamínoff, the noble and devoted missionary, was sent to Unaláshka, and began his labors among the Aleuts.

1825. February $\frac{16}{28}$, a convention between Great Britain and Russia was concluded. It recognized the southern boundary of the Russian possessions as the parallel of 54° 40′. Otherwise it resembled the previous agreement with the United States.

Franklin undertook his second journey westward from the Mackenzie River.

May 19, 1825, Captain F. W. Beechey, in H. M. S. Blossom, sailed from England to co-operate from Bering Strait with Parry and other eastern expeditions. Lieutenant Chístakoff succeeded Murávieff in the direction of the colonies. He transferred the principal depot of the Company from Sitka to St. Paul, Kadiák. Father Jacob Netsvićloff was sent as missionary to the Aleuts of Átka.

1826. Captain Fr. Lütké, in the corvette Seniávine, with the naturalists Kittlitz, Postels, and Mertens, sailed on a voyage of discovery from St. Petersburg. On the 27th of June, Beechey reached Kamchatka, and, passing through Bering Strait, entered Kotzebue Sound in July. He pushed as far north as the ice would permit, and then sent out a boat expedition under Mr. Elson, which reached and named Point Barrow. About the 18th of August, Franklin, coming from the east, reached Return Reef, his most western point. The Blossom then left Kotzebue Sound for San Francisco, whence she sailed for the Sandwich Islands and Macao, in this manner consuming the winter.

Failure of crops in the Ross Colony, during this and several subsequent years, reduced the annual contribution of flour from that point to about 30,000 pounds.

Captain Chístakoff removed a number of Aleuts from Ámlia to Átka Island, at their own request.

1827. The Seniávine reached Sitka June 27, 1827. Here she remained until July 31st. After visiting Unaláshka, the Príbyloff Islands, and St. Matthew, she sailed to Petropávlovsk, and then southward for the winter.

The Blossom returned to Bering Strait from Macao, but accomplished little or nothing, sailing for England October 7, 1827.

Étolin brought a cargo of salt from California to the colony.

All the hogs on Chérnobour Island perished from the tidal wave which accompanied an earthquake and eruption of the volcano on Únimak.

On the 6th of August a convention was agreed upon between the United States and Great Britain, leaving the territory west of the Rocky Mountains open to all parties for ten years.

1828. Captain-Lieutenant Hágenmeister sailed, in the transport Krótky, on a scientific expedition to the colonies. Captain Stanínkovich explored and determined many points on the north coast of Aliáska. Kramchénko sailed from the colonies in the Helena. The ninth provision ship arrived from St. Petersburg. The Company sent fifty-eight tons of salt

1828. to Kamchatka for the government. Lütké returned to Kamchatka in May, and examined that coast as far north as Bering Strait, returning southward in September.

1829. The Company determined to pay for foreign merchandise in future with bills of exchange instead of furs.

Vasílieff (not Wasílieff) explored the coast to the Kuskoqúim. Father Veniamínoff visited Nushergák and baptized thirteen natives. Íngenström visited the Andreánoffski Islands and Attú.

1830. Chérnoff examined the harbor of Núchek, Chtágaluk Island, and the mouth of the Káknu River. Kólmakoff renewed his explorations toward the Kuskoqúim. Étolin, Wasílieff, and others explored more thoroughly the coasts of Norton Sound and Golovín Sound.

On the $\frac{9}{21}$ November the Company took formal possession of the Kurile Islands.

1831. Baron F. P. Von Wrangell was appointed Director of the colonies.

The crew and cargo of a small vessel called the Sea-Lion, wrecked on Átka Island, were saved by the presence of mind of Íngenström, the pilot. The American ship Caernarvon arrived in Sitka with merchandise from England and Brazil. Vasílieff explored the south coast of Aliáska. Kramchénko sailed for the colonies in the government transport America. Tébenkoff visited Norton Bay.

1832. Chief Director Wrangell made a tour of the colonies, especially inspecting Nushergák. The chief depot and capital of the territory was decided finally to be located at Sitka. Lukeén was sent across the portage from Nushergák to the Kuskoqúim, where he established a trading-post.

Father Veniamínoff baptized seventy natives at Nushergák.

1833. A ukase was promulgated April $\frac{3}{15}$, by the ministers of the crown, allowing all Russians, under certain restrictions, to become residents of the colony.

By order of Baron Wrangell, Michael Tébenkoff established Fort St. Michael's on Norton Sound. Assistant Director Murávieff introduced important reforms into the hitherto destructive pursuit of the sea animals. (See Chap-

1833. ter VI. Part II.) An observatory was established at Sitka. Explorations in the Alexander Archipelago were carried on by Étolin and Zarémba.

1834. The Russian government, under the fourth article of the convention of 1824, withdrew the privilege of free navigation of their waters from American traders. This course was prompted by the sale of fire-arms and spirits to the natives by unscrupulous traders. The American Minister protested against the action of Russia, but without effect. The convention with Great Britain would terminate the following year. The insatiable Hudson Bay Company, ever ready to extend their traffic by force, or fraud if necessary, conceived the audacious idea of establishing a fort on the Russian territory before the term expired. They fitted out the vessel Dryad with colonists, cattle, and arms, and despatched her to the mouth of the Stikíne River.

Baron Wrangell was informed of the project, and despatched Lieutenant Dionysius Zarémba, in the armed brig Chíchagoff with the schooner Chilkáht, who built Fort Dionysius on a small harbor near the mouth of the Stikíne, and thus checked the encroachments of the English, who were not suffered to land. The latter were very indignant, and declared that £20,000 had been spent in fitting out and loading the vessel, which was, no doubt, a gross exaggeration. Remonstrances were useless, and they were obliged to return to Fort Vancouver on the Columbia River, where they had been fitted out. This matter was immediately brought before the English government, who demanded satisfaction, through their agents, for an alleged infraction of the treaty of 1825.

The Suchítna River was explored by Málakoff. The incompetency of an overseer in the Príbyloff Islands partially frustrated the measures adopted by Murávieff for the preservation of the seal. Father Veniamínoff was promoted to a bishopric, and transferred to Sitka. John McLeod, a trader from Liards River, discovered the headwaters of the Stikíne.

1835. An imperial ukase removed the restrictions, and allowed all Russian subjects to settle in the colonies.

1835. In this and following years, Glásunoff explored the deltas of the Yukon and Kuskoqúim rivers, ascending the former to Anvík. Captain Tébenkoff sailed for the colonies from Russia, in the Company's vessel Helena.

The crops failed in the Ross Colony, and this caused a scarcity of provisions in the settlements.

1836. Baron Wrangell was succeeded by Captain Kupriánoff in the General Direction of the colonies. The tenth provision ship Helena arrived, April $\frac{14}{26}$, at Sitka, in charge of Tébenkoff.

Redoubt St. Michael, attacked by the natives, was successfully defended by Kurupánoff. The crops failed again in the California settlement. In July the Hudson Bay Company organized the expedition of Dease and Simpson.

Small-pox appeared at Sitka. Kólmakoff ascended the Kuskoqúim with bidarrás. Woronkóffsky explored the south coast of Aliáska.

Dupetit Thouars sailed on his voyage round the world, in which he visited the northwest coast.

Captain Sir Edward Belcher, sailed on his voyage round the world.

1837. The dispute between the Hudson Bay Company and the Russian American Company was compromised. The strip of mainland from the southern boundary to Cape Spencer was leased for ten years to the Hudson Bay Company, who were to pay an annual rental of furs, and furnish a certain amount of provisions annually at fixed rates. This arrangement was concluded in Hamburg, and Fort St. Dionysius passed into the hands of the English.

July 9th, Peter Warren Dease and Thomas Simpson left the mouth of the Mackenzie River in two open boats, to explore the Arctic coast to the westward. On the 24th they arrived at Return Reef, Franklin's farthest point in 1826. August 1st, Simpson left the boats in the ice, and reached Point Barrow on foot August 4th. On the 17th of August they reached the mouth of the Mackenzie on their return.

Sir Edward Belcher visited the coast in the Sulphur. He touched at various points on the coasts and islands between Sitka and Kadiák. Captain Berens, with the Com-

1837. pany's vessel Nikolai I., arrived, August 17th, at Sitka. Schooner Chilkáht, with Woronkóffsky on board, was wrecked near Aliáska. Provisions, whiskey, rum, and a steam-engine arrived at Sitka from Boston. During this and several following years the small-pox raged among the natives of the coast, slaying thousands. The shamáns discouraged vaccination, and it spread everywhere.

The Company provided for three native schools. The Thlinket chief Kuat-hé voluntarily freed his slaves. Reverend Father Germain, the oldest missionary in the colonies, died on Spruce Island near Kadiák, soon after he had finished a mausoleum in memory of Archbishop Jóasaph.

1838. Kushevároff explored the northern coasts as far as Point Barrow in the brig Potifar. Lindenberg continued the researches among the islands near Sitka. He particularly examined Lynn Canal and the Chilkáht River. A colony of Aleuts were placed on Ámlia Island, in consequence of the great increase of the blue foxes which had been introduced there by the Company.

Father Golovín baptized one hundred and five natives of Nushergák.

Málakoff ascended the Yukon to Nuláto. He left a force under Notármi to build a trading-post. These men returned for want of provisions to the Redoubt in the fall. During the winter the Indians plundered and burned the buildings which had been erected.

The United States Exploring Expedition, under Lieutenant Charles Wilkes, was organized. The sloops of war Vincennes and Peacock, store-ship Relief, brig Porpoise, schooners Sea-Gull and Flying-Fish sailed from the Chesapeake, August 19, 1838, and passed around Cape Horn. The unfortunate Sea-Gull was lost with all on board.

1839. The Hudson Bay Company agreed to furnish the Russian American Company annually with 560,000 lbs. wheat, 19,920 lbs. flour, 16,160 lbs. pease, 16,160 lbs. barley, 36,880 lbs. bacon, 19,920 lbs. beef, and 3,680 lbs. ham, at fixed prices.

The Company's vessel Nikolai I., Captain Kádnikoff, sailed for the colonies, carrying the preparator of the Academy of Sciences, Elia Wossnessénsky, to make collections, and obser-

1839. vations on natural history on the northwest coast of America. Murásheff examined Kupriánoff Straits and the Kadiák Archipelago.

Father Veniamínoff presented a plan for the more efficient organization of the colonial missions.

Mount St. Elias is recorded for the first time as having emitted smoke. The sloop Aleut, under Kashevároff, was wrecked near Kadiák. Robert Campbell's Fort Drew, on the Liard's River, was plundered by the natives. Part of the inhabitants escaped to Fort Halkett.

1840. Kupriánoff was succeeded by Étolin as Chief Director of the colonies.

A new contract was entered into with the Hudson Bay Company, leasing the strip of coast already referred to. A Hudson Bay post was established at the head of Glacier Arm of Stephen's Strait. The Táku (not Táhco) River was ascended by Douglas for thirty-five miles. Captain Kádnikoff arrived with the twelfth provision ship, May 1st, from Russia. The hierarchy of the colonies was reorganized in conformity with Veniamínoff's recommendations and detached from the diocese of Irkútsk. A trading-post was built at the mouth of the Unalaklík River, Norton Sound. The small-pox disappeared from the colonies.

1841. The coast of Northwest America was visited by Wilkes's Exploring Expedition. On the 27th of April the Vincennes visited the mouth of the Columbia and the Straits of Fuca, and sent several exploring parties into the interior. The Peacock was lost at the mouth of the Columbia, July 18th. In the autumn the expedition sailed southward.

The thirteenth provision ship, under Lieutenant D. F. Zarémba, reached Sitka April 3d, with Lieutenant Zagóskin, I. R. N., on board.

The government transport Abo, Captain Junker, visited Ochótsk and the colonies. Sir George Simpson visited many points on the coast. De Mofras visited California and Greenough the Columbia River. Captain Kashevároff explored the coast of Bering Sea, north of Bristol Bay. Lukeén's Fort on the Kuskoqúim was partly destroyed by the Indians.

Étolin established a periodical fair for the natives around

1841. Sitka. The post at Nuláto on the Yukon was rebuilt by Derábin, who remained in command. The Ross settlement in California was sold to Captain John Sutter for $30,000. Part of this was paid in cash, and $15,000 was afterwards paid to the Company's agent in San Francisco, a Mr. Stewart. Stewart absconded with the money. In consequence of this and the expenses of prosecution a deficit appeared on the Company's books of 37,484 rubles, 50 kopeks.

1842. In December Mr. Linn, M. C. from Missouri, brought a bill before the Senate of the United States for the occupation of Oregon. This bill was passed by the Senate near the close of the session. Negotiations were entered into soon after by the United States and Great Britain to come to a conclusion in regard to the western territories of America. Lieutenant Zagóskin visited the valley of the Yukon, and reached Nuláto in the autumn.

Creoles were qualified for entering the church as priests. Michael Kútkan, a Christian native, was made a tyone or chief of the Sitka Thlinkets.

1843. Zagóskin ascended the Yukon to Nowikákat. A party sent to explore Plavézhnoi Lake were unable to make their explorations on account of the hostility of the natives.

Fremont started on his journey to the Rocky Mountain region.

1844. The charter of the Russian American Company was renewed for twenty years by the Emperor Nicholas I. This dated from the 1st of January, 1842.

Málakoff examined the Suchítna, and Gregórieff renewed the attempt to explore the Copper River. Kashevároff continued his investigations on the shores of Bering Sea.

Étolin consolidated seventy-five Aleutian settlements on Kadiák into seven regular villages. The first school was organized for the natives at Sitka.

1845. The Company established a factory at Aián on the Ochótsk Sea $\frac{\text{June } 27}{\text{July } 9}$. March $\frac{9}{21}$, Étolin issued strict instructions as to the manner in which employés should treat the natives. No servant of the Company was allowed to strike a native except in defence of his life.

May $\frac{15}{27}$, the brig Chíchagoff was run on shore on Copper

1845. Island to save her from foundering, by Captain Martin Klinkofström, who wintered there with his party. Étolin was succeeded by Captain Michael D. Tébenkoff as Chief Director of the colonies. Harder ascertained the astronomical position of the volcano of St. Paul in Aliáska.

1846. In April, war was declared between the United States and Mexico. Before this was known in California some trouble arose there, and the Mexicans attempted to expel the American settlers. Commodore Stockton arrived at Monterey with the news of the declaration of war. The Mexicans, under General Castro, retreated, and Stockton proclaimed the sovereignty of the United States over the territory. Several battles followed in January of the next year, in which the Mexicans were routed, and, by the treaty of peace which soon followed, California was ceded to the United States for fifteen millions of dollars.

The long-deferred question of the northwestern boundary of the United States, which had been omitted in the Ashburton treaty of 1842, now came up for settlement. The United States claimed all the territory south of 54° 40′ on the Pacific Coast, and Great Britain claimed all that between 54° 40′ and the mouth of the Columbia River. Both parties compromised on the parallel of 49° north latitude as the dividing line between their territories.

The Company's commercial transactions with the Sandwich Islands for the first time proved profitable. The vessel Sitka, Captain Conrádi, sailed from Russia for the colonies. The Thlinkets attacked, and took possession of, the fort at the mouth of the Stikíne River. Bénzeman explored the islands north of Kadiák, and determined their astronomical position.

1847. McMurray descended the Porcupine River, and built Fort Yukon near its mouth. A general earthquake was felt on the northwest coast. It was very severe at Sitka. Mounts Baker, St. Elias, and St. Paul in Aliáska, showed signs of eruption.

1848. The Company's vessel Átka sailed from St. Petersburg for the colonies, under Captain Riedell. She brought the mining engineer, Doróshin, who examined Baránoff Island

1848. and Cook's Inlet for mineral wealth, and also visited California. Serebránnikoff and two other Russians, with six Aleuts, ascended the Copper River. His profligacy excited the hostility of the natives, who killed him and three of the party, but delivered up his papers. Woiwódsky succeeded Tébenkoff as Chief Director of the colonies.

Hellt and Archimándritoff determined, astronomically, many points about the peninsula of Kenái. The transport Baikal, Captain Nevélsky, sailed from Russia for the colonies.

Captain Sir John Franklin having sailed in 1845, with Captain Crozier, in the Erebus and Terror, in search of a Northwest Passage, and no news from them having been received since the 25th of July of that year, the government of Great Britain determined to send out three expeditions in search of the missing vessels. This inaugurated the most flourishing era of arctic exploration. Only such as visited the Pacific will be noticed here, but many expeditions, public and private, were fitted out by England, France, and the United States for the same purpose. Although unsuccessful in finding any survivors, these expeditions have added very greatly to our knowledge of the northern regions; the courage, energy, and endurance shown by those engaged in them can never be too highly praised. The Plover, Commander Thomas E. L. Moore, sailed from Sheerness January 1, 1848, to join the Herald, Captain Henry Kellett, C. B., at Panama, whence they were to proceed to Petropávlovsk and Bering Strait, and co-operate with expeditions from the Atlantic and the Mackenzie River. The Plover was a slow sailer, and (her plan being changed) she did not reach the Sandwich Islands until August 22d, too late for investigations in the region of Bering Strait. She proceeded to Plover Bay, and, deciding to winter there, was laid up in an arm of the bay, called Emma Harbor by Captain Moore.

In the summer of 1848 the first whaler ventured through Bering Strait. This was the American ship Superior, Captain Roys. He was rewarded for his enterprise with a full ship in a very short time; the report of his success spreading, he was imitated, the following season, by one hundred

1848. and fifty-four American whalers, and the whale fishery was thus permanently established north of the Strait.

1849. In February of this year, gold was discovered on Captain Sutter's farm in California. Special explorations were made in the vicinity of Resurrection Bay, by the orders of the Company.

In June the Plover left her winter quarters and sailed for Kotzebue Sound, arriving near Chamisso Island on the 14th of July. The next day she was joined by the Herald and the yacht Nancy Dawson, owned by Robert Shedden, Esq., who had volunteered to assist in the search. July 18th, the vessels left the Sound. Two whale-boats, under Lieutenant Pullen, were despatched to examine the coast to the northward. On the 17th of August, land was seen, and the same day Captain Kellett landed on an island, which he named Herald Island, after his ship. At the same time high peaks were seen, probably those of Wrangell Land. The boat expedition reached Point Barrow in company with the yacht, which returned from that point. The boats kept on, reaching the Mackenzie River on the 25th of August, and Fort Macpherson on the 5th of September; from which point they made their way home by way of Norway House, York Factory, and Hudson Bay. The Plover wintered in Kotzebue Sound, while the Herald returned through Bering Strait and sailed for Mazatlan.

The Company's vessel Átka arrived in the colonies, under Riedell, for the second time. A vessel loaded with old and worthless goods was sent to California, and realized large profits. Subsequent attempts of the same kind were not so successful.

1850. On the 9th of September, California was admitted to the Union as a State.

On the 20th of January, Captain Richard Collinson and Commander Robert S. LeM. M'Clure, in the Enterprise and Investigator, sailed from Plymouth. They were to endeavor to reach the Plover in Kotzebue Sound in July. Collinson sailed eastward from Bering Strait, after leaving Lieutenant Barnard and Surgeon Adams with one man at St. Michael's Redoubt, Norton Sound, to prosecute their re-

1850. searches in the Yukon Valley. He could not pass Point Barrow on account of ice, and returned to winter in Hong Kong.

M'Clure, who arrived earlier in the season, passed Point Barrow, examined the coast of America to Cape Parry, discovered Prince of Wales Strait, Prince Albert and Baring Islands, and M'Clure Strait. He wintered in Prince of Wales Strait. The Plover reached Cape Lisburne, meeting the Investigator there August 1st, and wintered at Grantley Harbor.

Captain Mitkoff disposed of colonial timber at Guaymas very profitably. From this date, cattle were successfully bred at 'Kadiák and Cook's Inlet. A whaling company was organized by the Russian government, and the first vessels employed in the fishery sailed December $\frac{13}{25}$.

During the winter Captain Bedford Pim made explorations between Norton and Kotzebue Sounds and Grantley Harbor. Barnard went with Derábin to Nuláto in the winter, leaving Mr. Adams at the Redoubt.

1851. Collinson returned to Bering Strait in the spring, passed Point Barrow, reached Melville Sound, and, returning, wintered in Walker Bay.

M'Clure, finding the southern extremity of Prince of Wales Strait closed by ice, passed along the west and north coast of Baring Island, and anchored in Mercy Bay in sight of Melville Island. Here he wintered.

Meanwhile the Koyúkuns had attacked Nuláto in February, 1851, as elsewhere described. Barnard was killed, and Adams, after burying him near the fort, returned to St. Michael's. Captain Pim sailed for England in the Plover. Fort Selkirk, established by Robert Campbell on the Upper Yukon, was plundered by the Indians and burned, but the inmates were not injured.

During this and the two following years the Company's vessels supplied the government posts in Kamchatka with provisions.

1852. M'Clure was held by the ice all summer in Mercy Bay.

Collinson surveyed Minto Inlet and Prince Albert Sound; passed through Dolphin, Union, and Dease Straits; and wintered in Cambridge Bay, Victoria Land.

1852. Captain Tébenkoff prepared a hydrographic atlas of the colonies.

The scarcity of ice, which had previously been sent at great expense from Boston around the Horn to San Francisco, induced some San Francisco merchants to send to Sitka to obtain a supply. The vessel arrived in February, 1852, and took on board 250 tons, for which the Company received about $ 18,000, at $ 75 per ton. In October an agent was sent from Sitka to California, where a temporary arrangement was made by the Company to furnish 1,000 tons annually at $ 35 a ton. The Company which agreed to take the ice was called the American Russian Trade Company, and the contract was binding for three years only.

The Sitka-kwan (or Sitka Thlinkets) murdered forty Stikíne-kwan (Stikíne Thlinkets) who came to hold a council with the Russians at Sitka. The hospital at the Sulphur Springs near Sitka was destroyed by the natives. The Amphitrite, Captain Charles Frederick, and the Plover, Commander Rochefort Maguire, sailed from England for Bering Strait, wintering at Point Barrow. The Resolute, Captain Henry Kellett, sailed from England from the Atlantic to Melville Island, and wintered near Dealy Island.

1853. M'Clure, being fast in the ice, made arrangements for sending the weaker part of his crew to the Hudson Bay Company's posts on the Mackenzie, and for proceeding over the ice with the more able men to Lancaster Sound. To their great joy and surprise, Captain Bedford Pim, whom they had left near Bering Strait, appeared with a sledge party from the Resolute. Pim had found a note left by M'Clure at Winter Harbor, Melville Island, and reached the Investigator in the spring. The crew of the latter were transferred to the Resolute, on board of which they wintered. By walking over the solid ice from Mercy Bay to Dealy Island, they made the northwest passage.

Captain Collinson returned through the straits by which he had come, and, doubling Cape Bathurst, wintered in Camden Bay. Maguire, in the Plover, wintered at Point Barrow.

Commander Trollope, in the Rattlesnake, wintered in Port Clarence, Bering Strait. Commodore Perry, who had started

1853. in November of the preceding year on the United States Japan Expedition, reached Yeddo Bay in June, 1853, where he wintered. The North Pacific Exploring Expedition, in charge of Cadwalader Ringgold and Captain John Rodgers, reached China. Captain Ringgold, being out of health, was obliged to return, and Captain Rodgers took charge of the expedition.

The Russian American Company took possession of Sakálin Island, north of Yesso, in the Japanese Archipelago.

1854. The crews of the Investigator and the Resolute were transferred from the latter vessel to the North Star, Captain Pullen, at Beechey Island, and returned on board of her to England in the month of October. Collinson left Camden Bay July 20th, passing Point Barrow and Bering Strait, and reaching England with the Plover in the spring of 1855.

Commodore Perry concluded the treaty with Japan in March, 1854.

Commodore Rodgers, having divided his forces, carried on explorations among the Aleutian Islands, on the coast of Kamchatka, in Bering Strait, and in the Arctic Ocean north of the Strait.

The French and English forces attacked the town of Petropávlovsk, but were routed by the Russians and Kamshadales with a loss of one hundred and seven men. The English Admiral Price committed suicide in the shame which he felt at the result; he was buried on the shore, and the next day, August 29th, the fleet left the Bay of Avatcha.

The Company's vessels were gratuitously placed at the disposal of the Imperial government during this and the next year. The settlements were supplied with provisions chiefly by American vessels. The President of the American Russian Trade Company, armed with letters from United States officials and the Russian Minister at Washington, went to St. Petersburg and obtained an audience from the Emperor, opening negotiations in relation to the ice contract.

1855. He succeeded in obtaining an Imperial order dated October, 1855, on the Russian American Company, requiring them to sell ice at the original cost in the colony, and to furnish it in sufficient quantities to supply California, Mexico,

1855. and the Sandwich Islands. They were also to supply coal, timber, and fish for twenty years, and in return to receive half of the net profits.

The exploring expedition under Commodore Rodgers reached San Francisco on its return.

In May the allied forces returned to Petropávlovsk, which had been evacuated by the Russians. They captured an old Russian whaler, burned the government buildings, broke all the windows in the town, robbed and injured the Greek Catholic Church, and razed the old abandoned earthworks. After this child's play they left Avatcha. The Company's brig Ochótsk, chased by the allied cruisers, was wrecked near the Amoor River. The Thlinkets again revolted at Sitka. They took possession of the Indian chapel, killing two Russians and wounding nineteen. Woiwódsky subdued them, killing sixty of the ringleaders.

The Kwikhpagmúts attacked Fort Andréafsky, killing two Russians, the only occupants.

1857. The fall of Sebastopol and the ensuing peace relieved the Company from the alarms and contingencies of war.

1858. The Thlinkets voluntarily proposed to open trade with the Russians, and tendered, as a neutral ground for trading, a point near the Stikíne River.

1859. The President of the Ice Company in San Francisco proved to be a man of no capital. He could not build the necessary houses to receive the ice in San Francisco, and the fish and ice arriving from Sitka were spoiled for want of storage. Misunderstandings arose. The bank failed in which the Ice Company kept their funds, and the President absconded with the money. At last Captain Fúruhelm was sent from Russia to California to annul the contract and make a new one. He succeeded in doing this without resort to legal process, but the proceedings were not consummated for several years.

The Hudson Bay Company's lease was renewed for the second time, for four years. The annual rental was two thousand sea-otter skins. The contract was originally made June 1, 1840, renewed in 1849, again in this year, and was to expire June 1, 1862.

1859. A new fort was built at Nuláto on the old site. Volcanic action was felt in the colonies.

1860. Woiwódsky was succeeded by Fúruhelm as Chief Director of the colonies. The Kadiák was wrecked near Spruce Island. Robert Kennicott passed the winter at Fort Yukon, where Mr. Lockhart was in command.

The Imperial Chamberlain, Paulus Nikolái-evich Golovín, was ordered to the colonies to investigate and report on their condition, pending the petition for an extension of the charter of the Russian American Company.

1861. Kennicott descended the Yukon to the Small Houses.

The pilot, Michael Kadin, lost the steamer Nikolai I. in Kake Strait. The natives saved the crew and entertained them hospitably until a vessel arrived in search of them. Golovín arrived in Sitka. His report, which was received in St. Petersburg in the same year, and published the following year (in Russian), contains many important statistics, the most interesting of which are given below, with a few from Grewingk.

The original capital of the Company was 98,000 R. s.* After 1818 the stock was watered by making the shares 500 R. instead of 150 R. s. In 1844 the reserve capital, exclusive of property and the original capital, was about 450,000 R. s. In 1862 it stood as follows: Original capital, 660,511 R. s. Reserves, 737,745 R. s. Insurance, 174,372 R. s. Total, 1,572,628 R. s. The original investment paid from six to ten per cent, clear of all expenses, annually, beside the pickings and stealings of the employés and officers, which were a by no means insignificant item. Dividends, on each share of about $21, were from 1841 to 1851 about $3.00; from 1851 to 1858, $3.60; from 1858 to 1860, $4.00. From 1841 to 1851 the Company paid two million rubles taxes to the Imperial government. The gross income of the Company from 1841 to 1862 was 20,305,681 R. s. January, 1860, the balance of capital on hand, including property, was 5,907,859 R. s. The total amount of dividends from 1842 to 1859 was 2,103,004 R. s. The average annual dividends amounted to 142,000 R. s.

* R. s. = silver rubles, each worth about seventy-five cents. R. = paper rubles, now worth about twenty cents.

1861. About 40,000 R. s. were issued in the form of marki, or parchment bills, stamped with the Company's seal, for circulation in the colonies.

The government was exclusively in the hands of the Chief Director, who was bound by oath to support the interests of the Company. He was elected by the Directory at St. Petersburg. This system was prolific in abuses. There was no law in the colonies, except the by-laws and regulations of the Company. On this ground the colonial officials were obliged to discharge from custody a foreigner who was caught smuggling, as there was no law by which he could be punished, as he was not a servant of the Company.

The territory was divided into six districts. Kadiák had a special bureau to itself, but the others were governed by officers called Uprovalísha. The districts were: I. Sitka, from Mount St. Elias south; II. Kadiák, from St. Elias to Bristol Bay, and west to the Shúmagin Islands; III. St. Michael's, including Norton Sound, the Yukon, and the Kuskoqúim; IV. Unaláshka, from the Shúmagins to the Príbyloff, and including the Fox Islands; V. Atka, comprising the remainder of the Aleutian chain and the Commander's Islands; VI. Kurile, including the Kurile Islands.

In the early days of the Company the Aleuts were subjected to the most horrible outrages. The names of Glóttoff and Solóvieff make them shudder to this day. Thousands perished under sword and fire. Long after these enormities were checked, the Russians considered the Aleuts as beasts rather than men. No one thought of ameliorating their condition; on the contrary, dissension and quarrels were intentionally stirred up in their principal villages for their destruction. It is well known that Baránoff regarded the life of an Aleutian as of no value; hundreds of these poor creatures perished in forced voyages between Sitka and Kadiák in their frail kyaks. Their numbers were diminished from 10,000 in 1799 to 5,238 in 1808 (Resánoff's census), and to about 1,500 at the present day.

The Aleuts were the slaves of the Company. They were obliged to attend all hunting expeditions, and sell all furs to

1861. the Company for whatever the Company chose to give, in goods. On the latter the Company charged 42 per cent freight in trading and 33 per cent on all sold to employés. The price for groats was $1.00 per pood of 36 lbs.; for white flour, $2.00 per pood. The yearly imports were 400 tons. At Sitka, all servants of the Company whose pay was less than $200 a year drew from the public kettle and bake-house at $1.00 a pood for bread. The fare consisted principally of fish; bacon and wild goats' flesh were rarely obtained. They were also allowed eight cups of rum per annum. Married men who did not wish to eat at the public table could draw the value of the food in cash, and purchase their own provisions.

The hierarchy of the colonies had its head-quarters at Sitka. There were seven missionary districts; namely, Sitka, Kadiák, Unaláshka, Átka, Kenái, Nushergák, and Kwikhpák. The churches were supported by voluntary offerings. Their accumulated capital amounted in 1860 to 50,000 R. s., bringing five per cent interest. The Company contributed, toward the support of four churches, the sum of $6,600 per annum. The Holy Synod paid 3,085 R. s. toward the Kenái mission. The income from candles in the churches amounted to $1,100. There were 11 priests and 16 deacons in the colonies. A church was established for the natives at Sitka, but they were seldom seen there. When they did enter they looked bewildered, squatted down and smoked, and went out apparently much relieved. In 1846 there were 531 Christian Thlinkets. In 1854 the number was diminished to 38, and in 1859 there were only 42. The Aleuts appear zealous Christians, but if the Government ordered them to become Mohammedans they would as readily comply. They were utterly crushed by the early traders.

The first school was established by Shélikoff in Kadiák to teach the natives to read; the traders were the teachers. The second school was also in Kadiák, and the pupils received instruction in the Russian language, arithmetic, and religion. A few years after, a similar one was opened at Sitka, but until 1820 it was very poor. In that year a naval

1861. officer took charge of it until 1833, when it fell into the hands of Étolin, who made it quite efficient. In 1841 an ecclesiastical school was opened in Sitka, and in 1845 it was raised to the rank of a seminary. This, as well as the other schools, was in a very bad condition. In the latter, pupils received instruction in the Russian language, religion, arithmetic, geometry, navigation, trigonometry, geography, history, bookkeeping, and the English language.

In the ukase of November $\frac{15}{27}$, 1859, a plan for a general colonial school was approved. It was opened in 1860 with twelve pupils; eight of these were educated for the Company's service, and four were the sons of priests. A few day-scholars were admitted free. After five years' study the Company's students were obliged to serve the Company for fifteen years, at a salary of $20 to $70 per annum. (It is to be hoped that the announcement of these facts will enlighten those philanthropists who have declared, since the purchase, that the United States were depriving the natives of the advantages which the Company had afforded them of a free education. The only free schools in the territory were those of the missionaries, and in them were taught little beside the religious observances of the Greek Church, and the art of reading the Sclavonic or ecclesiastical characters.) The annual cost of this school was $5,800; in 1862 it contained 27 pupils, of whom only one was a native. Only nine studied navigation. In 1839 a girls' school was established for children of servants of the Company, and orphans. In 1842 it had 42 pupils; in 1862, 22 pupils. The instruction was principally in sewing, washing, and other housework. In 1825 Father Veniamínoff established a school in Unaláshka for natives and Creoles. In 1860 it contained 50 boys and 43 girls. A school on Ámlia Island in 1860 had 30 pupils. The priest at Nushergák in 1843 had 12 pupils. A schoolhouse was built on the Lower Yukon, but there were no pupils.

The expenses for medical treatment were $9,000. There was a hospital at Sitka of 40 beds, and one at Kadiák of 10 beds. In 1860 there were entered at Sitka 14,000 patients, of whom 22 died. At Kadiák there were 550 entries and 12

1861. deaths. A hospital for skin diseases was opened at Sitka, near the sulphur springs. The water contained sulphur, iron, chlorine, and manganese, and had a temperature of 122° Fahrenheit. There was an asylum for the infirm and poor, and three or four old servants of the Company received pensions.

In 1838 the treaty with the Hudson Bay Company proved beneficial. Previously the Russian American Company had lost by it. This treaty excluded arms, ammunition, and spirits from the trade with the natives. But in March, 1851, the Hudson Bay Company's steamer visited the islands, and told the natives that they would sell any amount of the prohibited articles at their trading-posts. This killed the Russian tradé with those tribes which inhabit the Alexander Archipelago. Hostilities were frequent, and the Russian Company's steamer was obliged to remain at Sitka to guard against an outbreak of the natives. In 1860, Fúruhelm ordered her to resume her trips among the islands, but no trade was effected. Since 1850, traders from the Sandwich Islands visited the Chúkchees and tribes on the northern coast, and provided them with liquor, arms, and ammunition. The natives of the interior of Siberia now received supplies through the Chúkchees, who would not trade for other articles. Traders even landed on the Aleutian Islands, in defiance of the rights of the Company. The trade with the towns in Kamchatka was worth little since the government had withdrawn the garrisons. At the mouth of the Amoor, American and German traders competed with the Company successfully. Golovín was justly indignant at the sale of liquor by the traders, and proposed that the Imperial government should send a cruiser to stop their traffic, or that the Company should be allowed to trade liquor in opposition to them. From 1852 to 1860 there had been 20,554 tons of ice, valued at $ 122,000, exported from the colonies. The fish and timber trade had not been successful, on account of there being no Company's storehouses in San Francisco. Golovín concluded with a sharp rebuke of the lazy and inefficient missionaries who had succeeded Veniamínoff, and finished by numerous recommendations of much needed reforms.

His Report was published in the Official Naval Journal

1861. (Morskoi Sbornik) in 1862, and the general tone of it was favorable to the Company. Kashevároff, a Creole, resident in St. Petersburg, prepared a reply; but as Golovín died in March, he modified it, that he might not be accused of attacking a dead man. A flippant reply, reflecting on his parentage, appeared in the Naval Journal. This was followed by a letter from Baron Wrangell, who said, that though he was prejudiced in favor of the Company, and Mr. Kashevároff appeared to incline the other way, still he must indorse Kashevároff's statements as being, from his own observation, more literally true and patriotic than anything before published in regard to the country.

1862. The result of this ventilation of the abuses prevalent in the colonies, was, that the new charter was not granted and the old charter of the Russian American Company was not renewed. From this time forward the Company had no rights or privileges in the colonies except on sufferance. The property of the Company still belonged to it, but it had no rights or privileges that were not common to all Russian subjects, and none, except the interest in their movable property and real estate actually in use, which they had any power to convey to any other company or persons from that time forward. Their operations, it is true, as far as trading was concerned, went on without cessation, but this was only pending the general winding up of the concern. The schools were all stopped, expenses curtailed, many posts abandoned, and the General Direction of the colonies was put in charge of an officer appointed by the Imperial government. This officer did not arrive immediately, and the post was filled during the interregnum by subordinate officers of the Company.

Golovín, having returned to Russia, died in St. Petersburg on the 17th of March, aged thirty-nine years. Michael Kútkan, again elected tyone by the Sitka Thlinkets, was authorized by an Imperial ukase to settle the difficulties between the natives and the Russians, December 2d. A serious disagreement with the Hudson Bay Company arose, caused by the continued sale of liquor by that Company to the natives.

1863. Strachan Jones, Esq., descended the Yukon to Nowikákat.

Iván Simonsen Lukeén ascended the Yukon to Fort Yukon, and returned to St. Michael's, Norton Sound.

The new ice contract was finally arranged by Captain Fúruhelm. The Russian authorities were to furnish 3,000 tons of ice annually at $7 per ton, delivered at Sitka or Kadiák; but not to any other than the San Francisco Company, on the coast of Oregon, California, or Mexico, at less than $25 per ton. Sitka having too mild a climate to form good ice, or in sufficient quantities, the depot of the Ice Company was fixed on Woody Island near Kadiák.

An expedition under Commander Bassárguine ascended the Stikíne River in boats. They were accompanied by Professor William P. Blake.

1864. Fúruhelm was succeeded by Maksútoff, the first Imperial Governor of the colonies. The plan for building a line of telegraph from San Francisco to Bering Strait, and crossing by a cable, to meet the Russian government telegraph at the mouth of the Amoor River by a line built from Bering Strait overland, was organized by the enterprising Directors of the Western Union Telegraph Company. The original idea was mainly due to Perry M'D. Collins, Esq., formerly United States Consular Agent at the mouth of the Amoor. The co-operation of the Russian government was insured, and the command of the expedition to make the necessary explorations was intrusted to Captain Charles S. Bulkley, late of the United States Army Telegraph Corps, an accomplished electrician.

1865. The principal event of the year was the inauguration of the Western Union Telegraph Expedition. Captain Bulkley, in the United States revenue cutter Shubrick, visited Sitka early in the spring. On his return to San Francisco the expedition was organized on a military basis. The chief officers were Captain Charles S. Bulkley, Engineer-in-Chief; Captain Charles M. Scammon, U. S. R. S., Chief of Marine; Robert Kennicott, Chief of Scientific Corps; Scott R. Chappel, Quartermaster; George M. Wright, Adjutant; and Frank L. Pope, Assistant Engineer. Commissions were given to the various officers; flags and badges served to dis-

1865. tinguish the different branches of the service. A steamer, three barks, and a schooner were purchased for the use of the expedition, and, by permission of the Secretary of the United States Treasury, two revenue officers, Lieutenant John Davison and Lieutenant Russell Glover, accompanied Captain Scammon on the flag-ship, which was permitted to fly the revenue flag.

On the 17th of May, Major Frank Pope, Dr. J. T. Rothrock and party, with Edward Scoville, Esq., as astronomer, left San Francisco for British Columbia with the intention of penetrating from the head-waters of the Frazer to those of the Yukon.

On the 3d of July, Major S. Ábasa (Gentleman of the Bedchamber to the Emperor of Russia), with George Kennan, James A. Mahood, and Richard J. Bush, sailed for the mouth of the Amoor in the brig Olga, Captain Sandtmann. Their efforts were to be directed to exploration of a line on which the telegraph might be built, from the mouth of the Amoor to the Anádyr River, around the Ochótsk Sea.

On the 12th of July the steamer George S. Wright and the bark Golden Gate, flag-ship of the expedition, sailed from San Francisco, with most of the officers and men.

The Wright, Captain Marston, touched at Victoria and New Westminster. Here Frederick Whymper, Esq., was added to the expedition as artist. The steamer then proceeded to Sitka, where she met the Golden Gate. From this point the schooner Milton Badger, Captain Harding, sailed for the Anádyr River, with a party under Lieutenant McRae, who were to co-operate with Major Ábasa's party. The bark Clara Bell, Captain Sands, was at Sitka with telegraphic material, having made a remarkably quick passage from New York. From this point she repaired to New Westminster. The Wright, Captain Marston, and the Golden Gate, Captain Scammon, after a short stay in Sitka, sailed in company for Únga Island. There they spent a day in the north harbor, and then sailed for St. Michael's Redoubt, Norton Sound. Here Major Robert Kennicott and party were left to conduct the Yukon explorations. A toy steamer, which afterward proved worthless, was left to assist in ascending the

1865. Yukon. The Golden Gate and the steamer next touched at Plover Bay, where the bark Palmetto, Captain Anderson, had arrived with coal. The latter sailed for San Francisco, and the steamer went to the mouth of the Anádyr, and then to Petropávlovsk, where the Golden Gate rejoined her. After a long stay in this the principal port of Kamchatka, both vessels sailed for San Francisco, arriving there November 30th. Pope's party wintered at Tátla Lake, British Columbia.

Ábasa's party explored a route for the line from the Anádyr to the Amoor.

Kennicott's party crossed the portage to Nuláto. Baron Otto de Bendeleben and W. H. Ennis explored the line between Norton Bay and Port Clarence. J. T. Dyer and Richard D. Cotter made a very hazardous and successful exploration of the country between Norton Bay and the mouth of the Koyúkuk River on the Yukon.

In this season, M. Gustave Lambert, a French hydrographer, passed through Bering Strait on a whaler.

1866. On the 13th of May, Major Robert Kennicott, a well-known and indefatigable Arctic explorer and naturalist, died at Nuláto of heart disease brought on by excessive privation, hardship, and anxiety. His body was taken to the Redoubt by a party under Charles Pease. Frank E. Ketchum, Michael Lebarge, and Iván Simonsen Lukeén carried out Major Kennicott's plans, explored the Yukon from Nuláto to Fort Yukon, and returned, crossing the portage from Yakútzkalátenik to Unalaklík and thence by sea to the Redoubt.

Explorations by Major Pope and party were extended to the Stikíne River.*

The bark Rutgers sailed from Puget Sound to Plover Bay. The bark Onward sailed to Petropávlovsk and the Ochótsk Sea. The bark Clara Bell sailed for Penjinsk Gulf. The bark Golden Gate sailed for Plover Bay. The Wright went to Petropávlovsk, where the Russian corvette Váriag was awaiting orders. The flag-ship Nightingale left San Francisco July 11th, for Plover Bay. The United States steamer Saginaw sailed for Petropávlovsk. The bark Evelyn

* Unfortunately I am without data to specify the exact extent of these explorations.

1866. Wood sailed with material from Victoria to Plover Bay. The Nightingale, Captain Scammon, with two small stern-wheel steamers on deck, arrived at Plover Bay August 14th, finding the Rutgers there. The Wright left Petropávlovsk, touched at the Anádyr, and reached Plover Bay August 18th. The Golden Gate arrived on the 27th. A party under Mr. Bush, who had come on the steamer to Plover Bay, left for Anádyr on the Golden Gate. A party under Mr. Kelsey was left at Plover Bay. Another, under Mr. Libby, sailed for Grantley Harbor on the Rutgers. The Wright and Nightingale left for St. Michael's, where the latter arrived on the 24th of September. The subsequent explorations in that vicinity are narrated at length elsewhere. The vessels returned to San Francisco, with the exception of the Golden Gate, which was nipped by the pack in Anádyr Bay and lost. The negotiations for the sale of Russian America began in this year.*

1867. The Western Union Telegraph Company, finding that the Atlantic Cable had proved a success, at an expenditure which made competition impossible, decided to abandon an enterprise which had already cost in the neighborhood of three millions of dollars. Michael Byrnes (who was exploring the Táhco) and other explorers were recalled, the Nightingale and the Clara Bell were sent to bring back the more remote parties at the Anádyr, Grantley Harbor, and St. Michael's.

The route was ill chosen for the proposed line. Had it been over the well-trodden paths from St. Paul, Minnesota, through the Hudson Bay Territory to Fort Yukon, and then down the Yukon, there is reason to believe that the line might have been built at a less cost than the amount wasted on the west coast, in the mountainous region and dense forests of British Columbia. The Hudson Bay route was recommended by Mr. Kennicott, but other counsels prevailed. Of other causes which tended to obstruct and defeat the intentions of the Company it is not in my province to speak. The line which was put up in British Columbia, with the exception

* There is a story, with I know not how much foundation, that a company of citizens applied to Mr. Seward to assist them in purchasing the country to carry on a fish, fur, and timber trade, and that he, finding Russia willing to sell, secured the territory, not for the private company, but for the nation.

1867. of the very small portion in use, is said on good authority to be already out of repair and quite useless. That which was erected on Norton Sound was so poorly built that in the fall of 1867 not a single pole stood erect and perpendicular.

In the failure of the commercial part of the enterprise it must still be a matter for congratulation that the liberal policy of the Directors of the Company enabled much geographical and scientific information to be obtained without any large additional expense. For this liberality the thanks of all scientific men are due to these gentlemen.

On the 30th of March the treaty of sale was agreed upon. It was ratified by the United States May 28th ; exchanged and proclaimed by the President of the United States, June 20, 1867. On the 6th of September, 1867, General Jefferson C. Davis, U. S. A., was appointed commander of the military district of Alaska. On the 18th of October the territory was formally surrendered by the colonial authorities to General Lovell H. Rousseau, U. S. A., who had been appointed, August 8th, United States Commissioner to receive the territory.

NOTES AND DOCUMENTS ACCOMPANYING THE TRANSFER.

[A.]

By the President of the United States of America.

A PROCLAMATION.

Whereas, a treaty between the United States of America and his Majesty the Emperor of all the Russias, was concluded and signed by their respective plenipotentiaries at the city of Washington, on the thirtieth day of March last, which treaty (being in the English and French languages) is, word for word, as follows:—

The United States of America and his Majesty the Emperor of all the Russias, being desirous of strengthening, if possible, the good understanding which exists between them, have, for that purpose, appointed as their plenipotentiaries : the President of the United States, William H. Seward, Secretary of State ; and his Majesty the Emperor of all the Russias, the Privy Counsellor Edward de Stoeckl, his envoy extraordinary and minister plenipotentiary to the United States.

And the said plenipotentiaries, having exchanged their full powers, which were found to be in due form, have agreed upon and signed the following articles: —

ARTICLE I.

His Majesty the Emperor of all the Russias agrees to cede to the United States, by this convention, immediately upon the exchange of the ratifications thereof, all the territory and dominion now possessed by his said Majesty on the continent of America and in the adjacent islands, the same being contained within the geographical limits herein set forth, to wit: The eastern limit is the line of demarcation between the Russian and the British possessions in North America, as established by the convention between Russia and Great Britain, of February 28–16, 1825, and described in Articles III and IV of said convention, in the following terms: —

"Commencing from the southernmost point of the island called Prince of Wales Island, which point lies in the parallel of 54 degrees 40 minutes north latitude, and between the 131st and the 133d degree of west longitude (meridian of Greenwich), the said line shall ascend to the north along the channel called Portland Channel, as far as the point of the continent where it strikes the 56th degree of north latitude: from this last-mentioned point, the line of demarcation shall follow the summit of the mountains situated parallel to the coast as far as the point of intersection of the 141st degree of west longitude (of the same meridian); and finally, from the said point of intersection, the said meridian line of the 141st degree, in its prolongation as far as the Frozen Ocean.

"IV. With reference to the line of demarcation laid down in the preceding article, it is understood —

"1st. That the island called Prince of Wales Island shall belong wholly to Russia (now, by this cession, to the United States).

"2d. That whenever the summit of the mountains which extend in a direction parallel to the coast from the 56th degree of north latitude to the point of intersection of the 141st degree of west longitude shall prove to be at the distance of more than ten marine leagues from the ocean, the limit between the British possessions and the line of coast which is to belong to Russia as above mentioned (that is to say, the limit to the possessions ceded by this convention) shall be formed by a line parallel to the winding of the coast, and which shall never exceed the distance of ten marine leagues therefrom."

The western limit, within which the territories and dominion conveyed are contained, passes through a point in Bering's Straits on the parallel of sixty-five degrees thirty minutes north latitude, at its inter-

section by the meridian which passes midway between the island of Krusenstern for Ignalook, and the island of Ratmanoff or Noonarbook, and proceeds due north, without limitation, into the same Frozen Ocean. The same western limit, beginning at the same initial point, proceeds thence in a course nearly southwest, through Bering's Straits and Bering's Sea, so as to pass midway between the northwest point of the island of St. Lawrence and the southeast point of Cape Chukotski, to the meridian of one hundred and seventy-two west longitude; thence, from the intersection of that meridian, in a southwesterly direction, so as to pass midway between the island of Attu and the Copper island of the Komandorski couplet or group in the North Pacific ocean, to the meridian of one hundred and ninety-three degrees west longitude, so as to include in the territory conveyed the whole of the Aleutian islands east of that meridian.

ARTICLE II.

In the cession of territory and dominion made by the preceding article is included the right of property in all public lots and squares, vacant lands, and all public buildings, fortifications, barracks, and other edifices which are not private individual property. It is, however, understood and agreed, that the churches which have been built in the ceded territory by the Russian government shall remain the property of such members of the Greek Oriental Church resident in the territory as may choose to worship therein. Any government archives, papers, and documents relative to the territory and dominion aforesaid, which may be now existing there, will be left in the possession of the agent of the United States; but an authenticated copy of such of them as may be required will be, at all times, given by the United States to the Russian government, or to such Russian officers or subjects as they may apply for.

ARTICLE III.

The inhabitants of the ceded territory, according to their choice, reserving their natural allegiance, may return to Russia within three years; but if they should prefer to remain in the ceded territory, they, with the exception of uncivilized native tribes, shall be admitted to the enjoyment of all the rights, advantages, and immunities of citizens of the United States, and shall be maintained and protected in the free enjoyment of their liberty, property, and religion. The uncivilized tribes will be subject to such laws and regulations as the United States may, from time to time, adopt in regard to aboriginal tribes of that country.

ARTICLE IV.

His Majesty the Emperor of all the Russias shall appoint, with con-

venient despatch, an agent or agents for the purpose of formally delivering to a similar agent or agents appointed on behalf of the United States, the territory, dominion, property, dependencies, and appurtenances which are ceded as above, and for doing any other act which may be necessary in regard thereto. But the cession, with the right of immediate possession, is nevertheless to be deemed complete and absolute on the exchange of ratifications, without waiting for such formal delivery.

ARTICLE V.

Immediately after the exchange of the ratifications of this convention, any fortifications or military posts which may be in the ceded territory shall be delivered to the agent of the United States, and any Russian troops who may be in the territory shall be withdrawn as soon as may be reasonably and conveniently practicable.

ARTICLE VI.

In consideration of the cession aforesaid, the United States agree to pay at the treasury in Washington, within ten months after the exchange of the ratifications of this convention, to the diplomatic representative or other agent of his Majesty the Emperor of all the Russias, duly authorized to receive the same, seven million two hundred thousand dollars in gold. The cession of territory and dominion herein made is hereby declared to be free and unincumbered by any reservations, privileges, franchises, grants, or possessions, by any associated companies, whether corporate or incorporate, Russian, or any other, or by any parties, except merely private individual property holders ; and the cession hereby made conveys all the rights, franchises, and privileges, now belonging to Russia in the said territory or dominion, and appurtenances thereto.

ARTICLE VII.

When this convention shall have been duly ratified by the President of the United States, by and with the advice and consent of the Senate on the one part, and on the other by his Majesty the Emperor of all the Russias, the ratifications shall be exchanged at Washington within three months from the date hereof, or sooner, if possible.

In faith whereof, the respective plenipotentiaries have signed this convention, and thereto affixed the seals of their arms.

Done at Washington, the thirtieth day of March, in the year of our Lord one thousand eight hundred and sixty-seven.

[L. S.] WILLIAM H. SEWARD.
[L. S.] EDOUARD DE STOECKL.

And whereas the said treaty has been duly ratified on both parts, and the respective ratifications of the same were exchanged at Washington on this twentieth day of June, by William H. Seward, Secretary of State of the United States, and the Privy Counsellor Edward de Stoeckl, the envoy extraordinary of his Majesty the Emperor of all the Russias, on the part of their respective governments,

Now, therefore, be it known that I, ANDREW JOHNSON, President of the United States of America, have caused the said treaty to be made public, to the end that the same and every clause and article thereof may be observed and fulfilled with good faith by the United States and the citizens thereof.

In witness whereof, I have hereunto set my hand, and caused the seal of the United States to be affixed.

Done at the city of Washington this twentieth day of June, in the year of our Lord one thousand eight hundred and sixty-seven, and of the independence of the United States the ninety-first.

[L. S.] ANDREW JOHNSON.

By the President:

WILLIAM H. SEWARD,
Secretary of State.

[B.]

Mr. Seward to Mr. de Stoeckl.

DEPARTMENT OF STATE,
Washington, March 23, 1867.

SIR: — With reference to the proposed convention between our respective governments for a cession by Russia of her American territory to the United States, I have the honor to acquaint you that I must insist upon that clause in the sixth article of the draught which declares the cession to be free and unincumbered by any reservations, privileges, franchises, grants, or possessions by any associated companies, whether corporate or incorporate, Russian or any other, &c., and must regard it as an ultimatum; with the President's approval, however, I will add two hundred thousand dollars to the consideration money on that account.

I avail myself of this occasion to offer to you a renewed assurance of my most distinguished consideration.

WILLIAM H. SEWARD,
Secretary of State.

MR. EDWARD DE STOECKL, &c., &c., &c.

[C.]

Mr. de Stoeckl to Mr. Seward.

[Translation.]

IMPERIAL LEGATION OF RUSSIA TO THE UNITED STATES,
Washington, March 25, 1867.

MR. SECRETARY OF STATE: — I have had the honor to receive the note which you were pleased to address to me on the 3d March, 1867, to inform me that the Federal government insists that the clause inserted in article sixth of the project of convention must be strictly maintained, and that the territory to be ceded to the United States must be free from any arrangement and privileges conceded either by government or by companies.

In answer, I believe myself authorized, Mr. Secretary of State, to accede literally to this request on the conditions indicated in your note.

Please accept, Mr. Secretary of State, the assurances of my very high consideration.

STOECKL.

HON. WILLIAM H. SEWARD,
Secretary of State of the United States.

[D.]

Mr. de Stoeckl to Mr. Seward.

[Translation.]

WASHINGTON, March 17–29, 1867.

MR. SECRETARY OF STATE: — I have the honor to inform you that by a telegram dated 16–28 of this month from St. Petersburg, Prince Gortchakoff informs me that his Majesty the Emperor of all the Russias gives his consent to the cession of the Russian possessions on the American continent to the United States for the stipulated sum of seven million two hundred thousand dollars in gold, and that his Majesty the Emperor invests me with full powers to negotiate and sign the treaty.

Please accept, Mr. Secretary of State, the assurance of my very high consideration.

STOECKL.

HON. WILLIAM H. SEWARD,
Secretary of State of the United States.

[E.]

Mr. Seward to Mr. de Stoeckl.

DEPARTMENT OF STATE,
Washington, May 13, 1867.

SIR:—I have the honor to inform you that Brigadier General Lovell H. Rousseau has been appointed by the President the commissioner on the part of the United States to receive, from the commissioner appointed on behalf of his Majesty the Emperor of all the Russias, the territory ceded to the United States by the treaty of the 30th of March last. A copy of the instructions which have been given to General Rousseau for his guidance in executing that trust is herewith communicated for your information and that of your government.

I avail myself of this occasion, sir, to offer to you a renewed assurance of my most distinguished consideration.

WILLIAM H. SEWARD,
Secretary of State.

MR. EDWARD DE STOECKL, &c., &c., &c.

[F.]

Mr. de Stoeckl to Mr. Seward.

[Translation.]

WASHINGTON, August 13, 1867.

MR. SECRETARY OF STATE:—I have the honor to remit to you herewith copy of the instructions given to Captain Pestchouroff, commissioner of the Imperial government for the transfer of the territory which formed the Russian colonies of the northwest of the American continent.

Please accept, Mr. Secretary of State, the assurance of my very high consideration.

STOECKL.

HON. WILLIAM H. SEWARD,
Secretary of State of the United States.

Translation of Instructions given to Captain Pestchouroff, Commissioner on the part of the Imperial Russian Government, for the delivery of the Russian American Colonies to the Government of the United States.

1. Captain Pestchouroff has been directed to proceed to Washington and enter, through the medium of the Secretary of State and the Russian minister, into communication with the commissioner appointed by the

United States government to receive the said colonies, for the purpose of establishing an understanding as to the said transaction.

2. On the arrival of the two commissioners at New Archangel, Sitka, Captain Pestchouroff is directed to proceed, in the first place, to the formal transfer of the territory under mutual national salutes.

3. All the forts and military posts will be delivered at once to the American military forces that may follow the United States commissioner. Captain Pestchouroff will take the necessary steps to send home the Russian troops as early as convenient and deliver the barracks to the use of the American soldiers.

4. The public buildings, such as the governor's house, the buildings used for government purposes, dock yard, barracks, hospitals, schools, public grounds, and all free lots at Sitka and Kadiák, will be delivered by Captain Pestchouroff to the American commissioner as soon as practicable.

5. All the houses and stores forming private property will remain to be disposed of by their proprietors. To this same category belong smiths', joiners', coopers', tanners', and other similar shops, as well as ice-houses, saw and flour mills, and any small barracks that may exist on the islands.

6. The two commissioners, after making the division between the property to be transferred to the American government and that left to private proprietors, will draw up a protocol, and the American commissioner, on the documents furnished by the local Russian authorities, will deliver legalized certificates to the owners of said property in order to enable them to possess that property or otherwise to dispose of it.

7. The churches and chapels remain, according to the stipulations of the treaty, the property of the members of the Greco-Russian community. The houses and lots of ground which were granted to these churches remain their property.

8. As the Russian American Company possess in the colonies large stores of furs, provisions, and other goods, at present distributed in Sitka, Kadiák, and other stations on the continent and islands, they will require a certain lapse of time to collect, sell, or export their property. For that purpose the company will leave an agent or agents charged with the duty of settling finally their affairs.

It is hoped that the Federal government will allow the Russian American Company to settle finally their business, without subjecting their property or their agents to any taxes for a period of eighteen months, or at least one year, considering that the same property has never been taxed heretofore, and that the company, under the present circumstances, will have to dispose of their property at a loss.

9. In the settlement of all the affairs in connection with the transfer of the territory, Captain Pestchouroff is directed to proceed in the most amicable way, and the Imperial Russian government hopes that the authorities of the United States will be guided by the same liberal views, in order to avoid any difficulties and to complete this transaction in the spirit of the friendly relations existing between the two governments.

[G.]

DEPARTMENT OF THE INTERIOR,
Washington, D. C., October 26, 1867.

SIR: — In reply to your communication of the 24th instant in relation to attempts of American citizens to acquire pre-emption rights to lands at Sitka, in the newly acquired Territory of Alaska, I have the honor to enclose for your information a copy of a report this day made to me by the Commissioner of the General Land Office upon the subject of your inquiries. Such claims and settlements are not only without the sanction of law, but are in direct violation of the provisions of the laws of Congress applicable to public domain secured to the United States by any treaty made with a foreign nation; and, if deemed necessary and advisable, military force may be used to remove the intruders.

This department has no officers at Sitka, nor in any other part of the "Russian purchase," and must rely upon the State Department to cause the necessary orders in the premises to be communicated to our authorities there.

I have the honor to be, very respectfully, your obedient servant,

O. H. BROWNING, *Secretary.*

HON. WILLIAM H. SEWARD, *Secretary of State.*

[H.]

DEPARTMENT OF THE INTERIOR,
General Land Office, October 26, 1867.

SIR: — I have the honor to acknowledge the receipt of the department letter of yesterday, enclosing a communication of the 24th from the honorable Secretary of State, by which the department is advised that citizens of the United States are attempting to make claims and settlements at Sitka within the "Russian purchase" under the town site and pre-emption laws, and I have the honor to state that such settlements are illegal and contrary to law. See act of March 3, 1807, Vol. II., p. 445, United States Statutes.

In the absence of specific legislation by Congress providing for the

organization of land districts within the "Russian purchase," and the extension of our system of surveys over the same, settlements and claims under the town site and pre-emption laws are unlawful, and cannot be recognized under existing laws.

I am, sir, very respectfully, your obedient servant,

JOSEPH S. WILSON,
Commissioner.

HON. O. H. BROWNING,
Secretary of the Interior.

[I.]

Mr. Seward to General Grant.

DEPARTMENT OF STATE,
Washington, October 28, 1867.

GENERAL: — In the absence of specific legislation by Congress for the organization of land districts in Alaska, claims of pre-emption and settlements are not only without the sanction of law, but are in direct violation of laws applicable to the public domain. Military force may be used to remove intruders if necessary. Will you have the goodness to instruct Major General Halleck to this effect by telegraph, and request him to communicate the instruction to Major General Rousseau at Sitka?

I have the honor to be, General, your obedient servant,

WILLIAM H. SEWARD.

GENERAL U. S. GRANT,
Secretary of War ad interim.

[J.]

Mr. Seward to Mr. de Stoeckl.

DEPARTMENT OF STATE,
Washington, October 29, 1867.

SIR: — I have the honor to enclose for your information a copy of a letter of yesterday to General Grant, the Secretary of War *ad interim*, embodying an instruction which the President has directed to be sent by telegraph to Major General Halleck, by him to be promptly communicated to Major General Rousseau, at Sitka, with a view to preventing premature and illegal attempts to occupy land in Alaska.

Accept, sir, a renewed assurance of my very high consideration,

WILLIAM H. SEWARD.

MR. EDWARD DE STOECKL, &c., &c., &c.

[K.]

DEPARTMENT OF STATE,
Washington, September 6, 1867.

GENERAL: — In relation to the despatch of Major General Halleck, of the 2d of September, instant, in which he requests that the President will by proclamation declare the newly acquired Russian territory an Indian territory in order to prevent the introduction of ardent spirits among the Indians there, I am instructed to say that the President will retain the same for further consideration. At the same time he desires that Major General Halleck will confer with General Rousseau upon that subject, to the end that the matured views of those officers may be submitted to the President as early as practicable.

For the information of the War Department, I communicate a copy of an opinion of E. Peshine Smith, Esq., Examiner of Claims in this department, which sets forth a view of the laws of the United States bearing upon that question, which view is adopted by this department.

I have the honor to be, General, your obedient servant,

WILLIAM H. SEWARD.

GENERAL U. S. GRANT,
Secretary of War ad interim.

Official:

R. WILLIAMS,
Assistant Adjutant-General.

[L.]

BUREAU OF CLAIMS, September 5, 1867.

Proclamation that the territory ceded by Russia is Indian territory:

Such a proclamation is recommended by General Halleck in order to prevent the introduction of whiskey among the Indians.

The act of 1834 (4 Stat. 729), "to regulate trade and intercourse with the Indian tribes," provides that "all that part of the United States west of the Mississippi, and not within the States of Missouri and Louisiana or the Territory of Arkansas, * * * * for the purposes of this act be deemed and taken to be the Indian country."

The question is, whether the provisions of that act in respect to trade and intercourse with Indians are to be restricted to their operation in the Indian country which was within the United States *at the time of the passage of the act*, or whether they take effect and apply to new territory acquired by conquest or treaty, without any further legislation giving them such extension.

I think this question has been settled by the Supreme Court of the

United States in the case of Cross *vs.* Harrison (16 Howard's R., 164, 199). The question there was, whether upon the ratification of the treaty for the cession of California the existing several laws came into operation so as to regulate the rate of duties on imported goods without any act of Congress declaring their will in that respect, and creating collection districts. The court held that the ratification of the treaty made California a part of the United States, and that so soon as it became so the territory instantly became subject to the acts which were in force to regulate foreign commerce with the United States.

The argument was urged in that case that the revenue laws applied only to the territory under our jurisdiction when they were passed, until Congress, by creating collection districts in the new Territory, or some other act of the same nature, had manifested its will that the laws should be thus applied. That argument was overruled by the court, and it would, therefore, be overruled in respect to Alaska and commerce with the Indian tribes.

I think, therefore, that the new territory became a part of the Indian country on the 20th June last. A proclamation by the President is only necessary for the information of persons going into the territory of the restrictions to which they are subject in their intercourse with Indians. I think, however, the treaty itself may work some change in the existing law. For instance, one of the provisions is that no license to trade with the Indians shall be granted to any persons except citizens of the United States. The third article of the treaty provides that the inhabitants of the ceded territory, reserving their natural allegiance, may return to Russia within three years, but if they prefer to remain in the territory they (with the exception of native uncivilized tribes) shall be admitted to the enjoyment of all the rights, advantages, and immunities of citizens of the United States. While it may be that they cannot acquire the full rights of American citizenship until their election has been evidenced by remaining three years, it seems to me it would be a harsh construction, and one to be avoided, if possible, which should postpone for that period their right to receive a license to trade with the Indians. It can hardly be the intention of the treaty that they should lose any privileges by the incorporation of their territory with the United States. The provision should be deemed an enabling and not a restrictive one. If doubt remains on this point, as it may, it should, I think, be removed by Congress.

E. PESHINE SMITH,
Examiner.

Official:

R. WILLIAMS,
Assistant Adjutant-General.

[M.]

DEPARTMENT OF STATE,
Washington, January 30, 1869.

SIR: — I have the honor to acknowledge the receipt of your letter of the 27th instant, enclosing extracts from a communication from Mr. M. F. Smith, Jr., concerning the alleged habitual encroachment of the agents of the Hudson's Bay Company upon the trade and territory of Alaska, with a request for my views upon the subject.

By the sixth article of our treaty with Russia of March 30, 1867, the cession of territory and dominion therein made is "declared to be free and unincumbered by any reservations, privileges, franchises, grants, or possessions by any associated companies, whether corporate or incorporate, Russian or any other, or by any parties except merely private individual property holders.

Article 5 of the treaty between Great Britain and Russia of February 28, 1825 (3 Hertslet's Treaties, 364), which was revived and continued by the 19th article of the treaty between the same powers of January 12, 1859 (10 Hertslet, 1063), provides that "no establishment shall be formed by either of the two parties within the limits assigned by the two preceding articles to the possession of the other; consequently British subjects shall not form any establishment, either upon the coast or upon the border of the continent comprised within the limits of the Russian possessions." The articles referred to established the boundary lines between the British and Russian possessions on the northwest coast of America, the same adopted in our treaty of cession with Russia.

The provisions above cited are conclusive against the right of the Hudson's Bay Company to establish or maintain such an establishment as Fort Yukon is described to be in the communication from Mr. M. F. Smith, Jr. I understand the decision of the Supreme Court of the United States in the case of Harrison *vs.* Cross (16 Howard, 164–202), to declare its opinion that upon the addition to the United States of new territory, by conquest and cession, the acts regulating foreign commerce attach to and take effect within such territory *ipso facto* and without any fresh act of legislation expressly giving such extension to the pre-existing laws. I can see no reason for a discrimination in this respect between acts regulating foreign commerce and the laws regulating intercourse with the Indian tribes; there is, indeed, a strong analogy between the two subjects. The Indians, if not foreigners, are not citizens, and their tribes have the character of dependent nations under the protection of their government, as Chief Justice Marshall remarks, delivering the opinion of the Supreme Court in Worcester *vs.* The State

of Georgia (6 Peters, 557), "The treaties and laws of the United States contemplate the Indian territory as completely separated from that of the States, and provide that all intercourse with them shall be carried on exclusively by the government of the Union." The same clause of the Constitution invests Congress with power "to regulate commerce with foreign nations, * * * * and with the Indian tribes."

The act of June 30, 1834 (4 Stat., 729), defines the Indian country as, in part, "all that part of the United States west of the Mississippi and not within the States of Missouri and Louisiana, or the Territory of Arkansas." This, by a happy elasticity of expression, widening as our dominion widens, includes the territory ceded by Russia.

That act provides that no person shall trade with any of the Indians (in the Indian country) without a license; that any person, other than an Indian, who shall attempt to reside in the Indian country as a trader, or to introduce goods, or to trade therein, without such license, shall forfeit all merchandise offered for sale to the Indians or found in his possession; and shall, moreover, forfeit the sum of five hundred dollars; that no license to trade with the Indians shall be granted to any persons except citizens of the United States; that a foreigner going into the Indian country, without a passport from the War Department, the Superintendent or agent of Indian affairs, or the officer commanding the nearest military post on the frontiers, shall be liable to a fine of one thousand dollars; finally, that the Superintendent of Indian affairs, and Indian agents, and sub-agents, shall have the authority to remove from the Indian country all persons found therein contrary to law, and the President is authorized to direct the military force to be employed in such removal.

These provisions seem to be all that can be necessary to prevent the encroachments of the Hudson Bay Company, alleged by Mr. M. F. Smith, Jr.

Of the practical difficulties in the execution of these provisions you have better means of judging than has this department.

I have the honor to be, sir,

Your obedient servant,

WILLIAM H. SEWARD.

HON. JOHN M. SCHOFIELD,

Secretary of War, Washington, D. C.

CHAPTER III.

Aboriginal Inhabitants of Alaska.

THE aborigines of North America are naturally divided into two great groups. One of these comprises the natives universally known under the name of Indians. For the other (to supply a term long needed in generalization, to distinguish the tribes of Innuit, Aleutians, and Asiatic Eskimo from the natives comprised under the first head), in a paper read before the American Association for the Advancement of Science, in September, 1869, I proposed the term *Orárian* * in allusion to their universal coastwise distribution. The pertinence of this appellation will be better appreciated if the reader will take the trouble to lay down on the map the boundaries of the territory actually occupied by the members of this group. He will see that it forms a belt or girdle along the north and west coasts of America, and the extreme east coast of Asia, rarely interrupted, as on the northwest shore of Kenái; sometimes produced inland near a great watercourse, such as the mouth of the Yukon or Mackenzie; but nowhere attaining any great breadth, and everywhere interposed between the Indians, who occupy the interior, and the sea.

Our knowledge is yet insufficient, and the scope of this chapter is too limited, to admit of the discussion of the question of the original identity of the Indian and Orarian stocks. It is an easy matter, however, to show the most salient points of present difference. Another and more interesting question, that of the original derivation of the natives of America, is also too wide for discussion here, while the facts on which to ground any hypothesis are very limited in number.

To the overshadowing influence of Indo-European study in

* From *ora*, a coast. I should have preferred a term of native derivation (e. g. *Innuit*) had there been any of sufficient scope; failing in that, a classical term was adopted.

philological science, and partly to the Semitic traditions which have become so thoroughly ingrained in Christian theology, may be principally attributed the unphilosophical manner in which many ethnologists have taken the theory of the population of America from Asia or Polynesia for granted. While I do not intend to discuss the question, or express a decided opinion on it, here, yet it is certain that the most eminent students of American ethnology are becoming more and more unwilling to accept this theory until more facts, upon which to base it, are brought forward. I propose to attempt to show that some of the facts which have been used in support of this hypothesis are susceptible of quite another interpretation. I refer to the existence of tribes of Orarian stock on the coast of the Chúkchee Peninsula. There are abundant data on record in regard to our North American Indians, which show how little physiological characteristics can be relied upon, as proofs of affinity or identity of origin, among the aborigines.

The accompanying vocabularies (see Appendix F) will assist the student in determining the affinities of some tribes previously but little known.

Orarian Group. — This great stock is confined to the northern and western shores of America, the islands of the vicinity, and the adjacent shores of that part of Eastern Siberia known as the Chúkchee Peninsula. They may be divided into three lesser groups, of which the most important is that of the *Innuit*. The others are the *Aleutian* branch, and that which, for want of a better name, I shall designate as the *Túski* branch.

The Innuit. — These comprise the Greenlanders, the northern Eskimo of the arctic voyagers, the Western Eskimo of Seemann and others, the Innuit of the islands in the vicinity of Bering Strait, and those of the west coast of America, south to Mount St. Elias.

The Aleutians. — These comprise the inhabitants of Aliáska, west of the 160th degree of longitude, and the Aleutian Islands.

The Túski. — This branch is composed of the Orarian tribe or tribes which occupy the coast of the Chúkchee Peninsula from Koliúchin Bay on the north to Anádyr Gulf on the south. We do not know satisfactorily the name by which they call themselves, but as Hooper says positively that they call themselves Túski, I have provisionally adopted his name. Some fragments of historical

records, and the traditions of which I received some account, while pursuing my inquiries among them in 1865 and 1866, throw new light on their origin. While we leave untouched the question of original Orarian emigration from Asia, we are able to determine pretty certainly that the Orarians now on the Asiatic coast were originally from America, and that their emigration has taken place within three hundred years.

At Plover Bay I was informed by *Nókum*, a very intelligent Túski, who spoke English, that the inhabitants of the country were of two kinds,—"deer men" (i. e. true Chúkchees) and "bowhead men" (Túski or Orarians). The "deer men" were the original inhabitants, and the "bowhead men," to which class he belonged, had come, long ago, from the islands (the Diomedes) to the northeast. He said that the reason they came was because there was war between them and the people who wore labrets. The latter proved the stronger, and the former were obliged to come to the country of the "deer men."* The latter allowed the "bowhead men" to settle on the barren rocky coast, and formed an offensive and defensive alliance with them against the invaders from the eastward. On interrogating one of the "deer men" who frequently visit the village, he confirmed the above, as identical with the Chúkchee traditions. Noticing in many places the remains of stone houses, similar to the Innuit tópeks of Norton Sound, I asked Nókum who made them. He replied that that was the kind of house which his people lived in very long ago, so long that his grandfather only knew of it by tradition; but that, wood being scarce, they had adopted a mode of building their habitations which was like that practised by the "deer men," and which was much better adapted to the country. So much for tradition.

In 1648, when Simeon Déshneff sailed through Bering Strait, he found natives upon the Diomedes, wearing labrets, who were at war with the Túski. This report was confirmed by Shéstakoff in 1730, and more fully by Peter Popoff, who had been sent to collect tribute from the Chúkchees. At the time of the visit of the latter, in 1711, the Túski were living in "immovable huts which

* So called because they subsist principally on the flesh of their tame reindeer, while the Túski, or "bowhead men," gain their living by pursuing the seal, walrus, and bowhead whale. There are also some impoverished true Chúkchees who have been reduced to the Túski mode of life in order to obtain a subsistence.

they dig in the ground." He also found among the Túski ten of the islanders wearing labrets, who had been taken prisoners of war.

Saur, in his journey from St. Lawrence Bay to the Kolýma River, saw Túski still living in the ancient underground houses, which were built of driftwood. According to later travellers, these huts on the northern coasts are now entirely abandoned, and have formed subjects for speculation in more than one work on the Polar regions. It may be mentioned in this connection that there is no doubt that the Aleutians originally emigrated to the islands from the American continent, driven by hostile tribes. Their original name signified "*men of the east*," and every known fact in regard to them adds confirmation.

It has been frequently remarked that the Túski and Innuit tribes have a Mongolian cast of countenance. This, upon an actual comparison, will be found to be much less than is usually supposed. The real points of resemblance are principally in the complexion, which is somewhat similar, and in the eyes. But the eyes of the Innuit are not oblique, as in the Chinese. They have an apparent obliquity, which is due to the peculiar form of the zygomatic arch, but the eyes themselves are perfectly horizontal. The prominent characteristics of the Orarian skull are the strongly developed coronary ridge, the obliquity of the zygoma, and its greater capacity compared with the Indian cranium. The former is essentially pyramidal, while the latter more nearly approaches a cubic shape.

The mean capacity (in cubic centimetres) of three Túski skulls from Plover Bay, according to Dr. Wyman, was 1,505; that of twenty crania of northern Eskimo, according to Dr. Davis, was 1,475, and that of four Innuit crania of Norton Sound was 1,320; thus showing a wide variation. The mean capacity of twenty West-American Indian crania was only 1,284.06. The mean height of all the Orarian skulls above referred to was 136.55 mill., against a breadth of 134.47 mill., while the height of the Indian skulls was 120.14 mill., against a breadth of 100.025 mill. The zygomatic diameter of the Orarian crania was 134.92 mill., while that of twelve Indian skulls was 134.65 mill. The Orarian skulls were most dolichocephalic, and the Indian most brachycephalic. The latter averaged 378.71 cubic cent. less capacity

than the former. The average height of the Orarians, except among the stunted tribes of the extreme north, will average as great as that of their Indian neighbors. The strength and activity of the former far exceed that of any northern Indians with whom I am acquainted. They are much more intelligent, and superior in every essential respect to the Indians. The language of the western Innuit differs totally in the vocabulary from that of any Indian tribes, while there are many words common to the Greenlanders and the Bering Strait Eskimo. On the other hand, the words of the language of the Aleutians are in very large part quite dissimilar to those of the most adjacent Innuit. There is more difference in this respect between them and the Innuit of Kadiák than exists between the Greenlandic and Bering Strait dialect. Nevertheless, the Aleutian language is clearly of the Innuit type, and is only entitled to rank as a branch of the Orarian stock.

The Orarian dialects differ from the Indian languages of Alaska in the following particulars, according to Veniamínoff: —

The Orarians have three kinds of numbers: nouns or abstract numbers, adjective or qualifying numbers, and a plural form of each number. In some dialects, as in the Aleutian, there is a dual number. These dialects have indefinite and possessive cases, all formed by changes in the termination of the words, so that there are some fifty cases for the same word; the conjugation of verbs in number and person is effected in the same way; the adverbs have numbers, and the idea of negation is expressed by a change in the termination of the noun, and not by the use of the word "no," except when the latter is used in answer to a question without other words. The Orarian dialects are deficient in some sounds which are common in the Indian languages, and the former, as a rule, are much more harmonious and less guttural than the latter. Phrases are expressed by a grammatical arrangement of words, while generally the Indians use a single word to express the same ideas.

The Indian languages of Alaska have only two kinds of numbers, singular and plural. There are only three cases to the nouns; the conjugation of verbs is expressed by changes in the beginning or middle of the word, and not in the termination; the adverbs are invariable; the words are, as a rule, harsh and gut-

tural; the number of words is less than in the Orarian dialects, and their general structure is more arbitrary and less grammatical. Both stocks have only one gender, or rather no change to express gender in the words. The Indians can rarely count more than two hundred, while some Orarian dialects have a regular succession of numbers up to ten thousand.*

The Túski Tribes. — These tribes are estimated by different authors at from one to five thousand souls. Their origin has been described. They have occupied the coast from Koliúchin Bay in the north to the Gulf of Anádyr on the south, but during the winter, at least, are at present confined to a narrower extent of country. Like all Orarians, they do not penetrate the interior to any great distance. They are on good terms with the Chúkchees, and there are several villages of the latter composed of individuals who have lost their deer, become impoverished, or from some other reason have adopted a sedentary life. There is reason to believe that there was originally a jargon, containing words of both languages, in use in communication between the men of the two races, as is at present the case near Norton Sound, between the Innuit and Indians. Communication is constantly kept up between the Chúkchees and Túski, and our knowledge of the language of the latter is still too meagre to enable us to say whether among themselves they yet speak a pure Orarian dialect, but it is probable that it has become, from constant intercourse, permanently mixed with Chúkchee words.

Coming, from a country where driftwood was abundant, to a district where it is very scarce, modifications have been necessary in the mode of life of the Túski, of which we have, as already shown, some historical record. At present the method of constructing their houses, sledges, and many other articles, is very similar to, though not quite identical with, the mode of the Chúkchees. They have no reindeer, however, and use dogs to draw their sledges. The summer houses of the Túski are made of walrus-skins, spread over a light frame. These are divided by hanging hides into various compartments where the inmates sleep and work during the day. They fill sealskin bags with moss and lay

* This subject will be more fully treated in a work in preparation for the Smithsonian Institution by Dr. George Gibbs and the writer. This work will also contain a large number of hitherto unpublished vocabularies.

TUSKI AND MAHLEMUTS TRADING FOR OIL.

soft skins over them for beds. Their tents at Plover Bay were placed on the pebbles near the beach. They burn moss soaked in oil, which is placed in an earthen dish with a ledge on each side, where a roll of moss serves for a wick. This, with a larger one for cooking over, is used to light and warm the tents in winter. To warm themselves they squat directly over the lamp, and cover themselves and it with a mantle of skin. Their food is principally the flesh and blubber of the walrus, seal, and whale. They eat much of it raw, but usually stew the leaner parts. They chop up the round-leafed sorrel and scurvy grass or water-cresses, and make a kind of salad, which is allowed to ferment before it is eaten. They also eat the berries of the heath (*Empetrum nigrum*), and obtain salmon trout from a lake near the village. The latter, as well as the leopard seal, is caught in a rawhide net. They use slings with great dexterity, and also three-sided arrows and darts of walrus ivory. A harpoon of slate with an ivory haft is used in the whale fishery. They have numerous but very diminutive dogs, which resemble those of the American Eskimo, but differ from the Kamshadale dogs. These animals are freely eaten, as I saw myself, on several occasions. Foxes and bears are rarely obtained and used as food.

Their dress is composed of seal and deer skins, the latter obtained in trade from the Chúkchees. They wear an inner shirt of reindeer skin, with breeches and socks of the same; outside of these, a párka, made very loose, with wide sleeves, a flap under the chin and a square hood, without trimming, but capable of being drawn up, like the mouth of a bag, around the face by a string inserted in the edge. There is no wolf-skin trimming, as in the párkies of the Innuit of Norton Sound. The skirt is sometimes trimmed with beaver. These párkies, being made of the tame reindeer skins, are often mottled with white and various delicate shades of brown. Their outer breeches are made of sealskin with the hair turned out. Their boots, if long, are made of the same material and tied at the knee, or, if short, at the ankle. They are quite water-proof. The short ones are sometimes prettily trimmed with white deerskin, or embroidered with sinew colored red with willow bark. The párka, or outer dress, including the boots, of the women is made in one piece. They get into it at the back by a hole, which is laced or tied up afterwards. The very loose,

baggy manner in which these párkies are made gives them a very ludicrous appearance, especially when made with the hair turned in. They also make fine strong kamláykas of walrus guts. These are worn in their kyaks or during bad weather.

The deerskins are obtained by barter from the Chúkchees. They are paid for with oil, walrus-skins, ivory, whalebone, and ready-made boats. They are tanned with the inner bark of the willow and alder, are as soft as a glove, and of a beautiful red-brown. They bear wetting much better than the skins which are prepared by the Innuit to the eastward.

Their winter houses are built on the most exposed spots, so that the wind may drive away the snow.

Whale ribs are erected in a circle, while turf is piled up around them for two or three feet, and the whole is covered with walrus-hide. The latter is oiled until translucent, and no windows are required. These huts are divided by hanging skins, as before described. Their kyaks are very small and light, and quite devoid of ornament. Their oomiaks are of the ordinary description, but are provided with flaps, which are usually rolled up outside of the gunwale. In stormy weather these are crossed over the boat and strongly laced, so that the cargo is kept dry. Two or three sealskins are inflated, and attached to the gunwale as floats, so that it is almost impossible for the boat to be swamped. With these boats they make long voyages, frequently visiting St. Lawrence Island. Here the frames of the boats are made from wood which grows much larger on the island than any on the Túski coast. They told me that the frames were made according to an invariable rule, and that the price of a frame was seven deerskins. They are tied up with whalebone, are sometimes covered with skin at the island and sometimes at Plover Bay. They are very well proportioned, strong, and light. Their sewing is done with whale and walrus sinew. Their whale line is made of double-twisted walrus-hide. There does not appear to be any notion that the oomiak is a "woman's boat" any more than a man's boat, as both sexes use oomiaks and kyaks without distinction. Their paddles are roughly made, and often very poor, as wood is so scarce.

The Túski do not wear labrets. This distinguishing characteristic was noticed by Déshneff and all subsequent voyagers. Both

sexes tattoo very extensively, not only on the face, but all over the body. The blue color is derived from berries. The women always have perpendicular lines on the chin, but this is omitted by the men. The former braid their hair on each side, while the men practise the tonsure, though not universally.

They are hospitable, good-humored, but not always trustworthy. They will steal, and have sometimes attacked small vessels in the Strait. On one occasion they attempted to take a small schooner, commanded by a captain of my acquaintance. A bloody fight ensued, in which the sailors were finally successful. An extreme degree of endurance, ferocity, and contempt of pain was shown by the Túski. One of them was pinned to the mast with a harpoon during the fight, but uttered no cry, and employed his last breath in spitting in the face of his assailant. After this conflict the Túski came to the conclusion that the whites were hard to kill, and no further attempts of the kind have been made of late years.

Their complexion is light, like that of all Orarians. The Chúkchee are rather darker. They are of moderate height, but look short, from their baggy párkies. They have no chiefs, but their most wealthy men have the greatest influence. They sometimes have as many as five wives, but one or two is the usual number. They are not prolific. If a man's wife bears only girls, he takes another until he obtains a boy, but no more. Boys stay at home and work, while the girls are married very early and go away. There is no marriage ceremony, but the parents exchange presents, and a feast is usually given by the bride's father. During childbirth, delivery is expedited by pressure on the fundus. The woman is delivered on her hands and knees. The custom of assisting in the delivery may be the cause of the curiously misshapen heads which are common among them. They are almost universally diseased from constant intercourse with the whalers. I noticed several Kanáka words which they used while talking with the whites, which were probably from the same source.

They have no laws, but the sentiment of the community is opposed to serious crimes. Nókum, from whom I derived most of my information in regard to their customs, told me that a man, who committed murder while drunk, was hunted by the whole

tribe; when found, he was taken to the house of the murdered man, and the flesh was cut off from his cheeks, breast, arms, and thighs, and he was left to die in misery. No murder had since occurred. Drunkards have been taken in canoes, while drunk, and set ashore a long way from home, to find their way back as best they might. Incorrigible thieves were sometimes banished from the village.

Drunkenness is a common vice among them. They have an uncontrollable passion for alcohol, which is plentifully supplied to them by whalers and traders, in exchange for oil, bone, ivory, and such furs as they may have obtained. There is also a large trade in guns, ammunition, hardware, &c. They hate the Russians, and will not trade with them.

Their customs in regard to the treatment of the old and infirm are, from a civilized point of view, exceedingly cruel and inhuman. I should not venture to record the facts, had I not obtained them directly from the natives, with partial confirmation from my own observations and those of the traders.

Those who die a natural death are carried out through a hole cut in the back of the hut or *yaráng*. This is immediately closed up, that the spirit of the dead man may not find his way back. The bodies of good men are burned, or rather broiled, with oil, moss, and driftwood. Women are not usually burned, on account of the scarcity of wood. Bad men are simply exposed to rot. An oval, about four feet long and two in diameter, is made of large stones. The interior is filled with moss. Here the body is laid and tied to poles which are passed under the stones. The innumerable dogs of the village often consume the greater part of the remains. They are aided by the crows, foxes, and bears. The place where the bodies were exposed at the Plover Bay village was a level spot on the side of the rocky hill, above the sandspit. This was abundantly strewn with bones. I counted several dozen of the stone ovals referred to. On the top of the hill, large fragments of rock were erected on end in circles. I asked Nókum about them, and he said each stone represented a dead man. He said they did not bury the dead, because the bears would certainly dig them up again.

When troubled with rheumatism, they sacrifice a dog to appease the evil spirits. Their religion, if it can be so called, re-

sembles that of the other Orarian tribes elsewhere referred to. They believe in a future state, but not in a system of reward and punishment. They also believe in many evil and some good but feeble spirits. Good men are supposed to go up into the air, and bad ones down into the earth. The custom of exposing the dead is common to many Orarian tribes.

They have shamáns who celebrate rites in honor of the dead. One of these was there during our visit. The natives took a deer and went up to the place of the dead. The shamán had long hair, but dressed like the other natives. He kindled a fire, and took the fat from near the deer's heart, and put a small piece on each of the upright stones before referred to. This ceremony was accompanied by a great deal of gesticulation, flourishing of knives, groaning, and mumbling by the shamán. He danced until he fell from exhaustion, and then remained perfectly quiet for some time. Meanwhile the others scorched the flesh of the deer and ate it. He then rose and made a harangue to the spectators, and the ceremony was over. According to Nókum's account, old, sick, and useless persons are put to death. He said that when an old person was sick for more than seven days, the others put a rope around his neck, and dragged him by it, around the house over the stones, for half an hour or so. If this did not kill or cure, the sick person was taken to the place of the dead before described. Here the individual was stoned or speared, and the body left for the dogs to devour, the latter being themselves eaten by the natives.

Sometimes a sledge, household utensil, or weapon is broken and left by the side of the body. Occasionally a more decorous method is adopted. Old and useless people frequently ask to be put to death, and the ceremony is as follows.

The victim is taken to the place of the dead, and the oval of stones is built as described. The cavity, which is only a few inches deep, is filled with moss. A large headstone is placed at one end, and another large stone at the foot; under these two poles are laid, with thongs attached. A deer is killed, and the blood allowed to flow on the headstone. The victim is then placed on his back. The legs and arms, of course, extend over the stone oval and are tied to the poles, so that motion is impossible. He is then asked if he is ready for death. If the answer is affirmative, his nostrils are stopped up with a substance (of

which more hereafter) which stupefies him. The carotid is then cut, the heart is pierced, or the large vein of the arm is opened, and the victim allowed to bleed to death. Good men are killed by their friends, and bad ones by women. If a good man, small sticks, moss, and grease are placed over, around, and under him, and the body is thus burned, but is very rarely consumed. It is to be feared that a negative answer to the question is not always heeded, but if it should be, the deer meat, which is otherwise eaten, is burned as a kind of atoning sacrifice. All the bones of the deer are carefully crushed.

On the 3d of September, 1866, we were informed by Nókum that a ceremony of this kind was in progress, and we made all possible speed to the spot to witness it, as previously we had hardly believed in the truth of the story. When we arrived everything was ready. The women and children were cutting up the deer meat, and the blood was on the headstone. The victim, a blind but not decrepit old man, was sitting in apparent unconcern by the headstone, and the others were squatting in a circle around him. He was the father of a wealthy native, but had been blind for five years. This, with the death of his wife and younger son, had made him rather childish. Nókum said that he was constantly weeping for his child, and finally requested to be killed. The natives were much disturbed at our approach, and, fearing interference, refused to go on until our vessels had left. So we were not able to witness the ceremony, which, indeed, we did not regret. The truth of the statements made by Nókum hardly need further confirmation. I saw on the hill the festering remains of a lame native, for whom our carpenter had made a crutch on our visit in 1865. It was said that he had been disposed of in the same way. I saw the fragment of a lance still remaining in the thorax. Yet some of the natives, who might have been afraid of retribution from us, declared that he had been frozen to death during the winter. The lance-head told another story.

The stupefying agent may perhaps be prepared from the wild *nux vomica* which grows to the westward. Nókum said that it was obtained from the "deer men"; that it was soft and black. If applied to a weak man's nostrils it would throw him into a swoon instantly. Strong men were obliged to swallow a little, which was followed by the same effects. A small portion was

often placed in a fresh deer liver, which was then left exposed to the air for two months. It then became a very strong poison to any animal or man when eaten. Bears were sometimes killed with it, but their flesh was uneatable.

The Túski look upon this custom of killing infirm people, rather as a species of philanthropy. "It saves them from pain and us from the trouble of taking care of them," was the reason assigned by Nókum, in rather more broken English.

These natives have also been called *Sedentary Chúkchees*, *Namóllos*, &c. Their tribal names are unknown, but a body of them living on *Chúkluk Island*, Seniavine Strait, called themselves *Chúklukmut*, according to one of the traders.

The Aleutian Tribes. — The etymology of the word *Aleut* will be found in the Glossary. The original name of these people, according to Humboldt, was *Kagatáya Koung'ns* or "People of the East." They are evidently of American continental origin, and at the time of their earliest discovery were engaged in active hostilities with the Kaniágmuts of the continent.

Since the time of their first intercourse with the Russians, their character, habits, mode of life, and even their very name, has been totally changed. Originally they were active, sprightly, and fond of dances and festivals. They were of a less determined character than their neighbors, the Kaniágmuts, but were by no means devoid of courage. Their mode of worship partook more of the character of a religion than that of any of the tribes which have still remained unchanged. Ground into the very dust by the oppression of ruthless invaders, their religious rites, gay festivals, and determined character have all passed away. A shade of melancholy is now one of their national characteristics. Whatever of good is ingrained in their characters may be in great part traced to the persevering efforts of one man. This person was the Rev. Father Innocentius Veniamínoff of the Irkútsk Seminary, since Bishop of Kamchatka. He alone of the Greek missionaries to Alaska has left behind him an undying record of devotion, self-sacrifice, and love, both to God and man, combined with the true missionary fire. To him also we owe the first detailed account of the modern Aleutian character and mode of life. The number of Aleutians was originally estimated at ten thousand, but at present there are not more

than fifteen hundred. Many writers have confounded the Kaniágmuts with them, but they are quite distinct.

The Aleutians, properly so called, are divided into two tribes, the Átkans and Unaláshkans. The former belong in the western part of the archipelago, and the latter were originally confined to the eastern portion. Arbitrary transportation of whole villages from one point to another, of late has greatly tended, with the constant admixture of Russian blood, to destroy or obliterate these distinctions. The chief difference between the two dialects consists in the method of forming the plural of nouns. The Átkans form it by adding *s* or *sh*, and the Unaláshkans by adding *ng*. The diminutive words of the former end in *kutshak*, those of the latter in *dak*. Many of the words are more or less different in the two dialects.

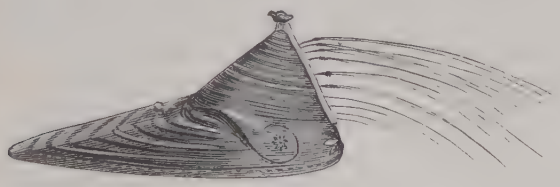
The construction of the Aleutian dialects is nearly the same as that of the Kaniágmuts, but the Aleutians count by the decimal system up to ten thousand, while the latter can only compute two hundred, using the number five as a basis. The words, almost without exception, are quite different in the two groups.

The Aleuts are light and nearly the same color as the Innuit of the northwest. Their features, perhaps from the great admixture of Russian blood, are more intelligent and pleasing. The hair is usually coarse and black. The mustache and beard are always very sparse and of the same color as the hair. Their stature is about the same as that of most civilized races; if anything, above the middle height. The habit of constantly sitting in their bidárkas, which are very contracted, has given most of them a stoop, and their legs are usually ill formed. The women are shorter but better proportioned, and many of them are pleasing in appearance.

The national dress of the Aleutians, when first observed, was a long shirt or párka without a hood, but having a straight collar. This dress had tight sleeves, but the body was long and loose. They wore no breeches, and their boots came up to the knee. The párka was made of the skins of fur animals, or of birds, such as the puffin and the diver. Over this, when in his boat or in bad weather, the Aleut wore a kamláyka with a hood which covered the head. These kamláykas, or water-proof shirts, are most beautifully embroidered, fringed with feathers, among which

may be noted especially those white feathers which appear on the cormorant during the breeding season. The shirt is made of the entrails of the sea-lion, as elsewhere mentioned. On his head the Aleut wore a peculiar hat made of a very thin piece of wood, bent and painted as in the following sketch. This hat was either painted, or ornamented with thin sheets or strips of bone curiously carved. A small bird, or other carving, usually adorned the apex. At the back a fringe stood out, composed of the stiff bristles or whiskers of the sea-lion (*Eumetopias*). In front the brim was prolonged, so as to shield the eyes from the glare of the water and the sun.

The clothing of birdskins was peculiar to the men, that of furs, to the women. Their houses were dug in the earth, lined with upright poles of driftwood, and roofed with planks covered with turf. They entered through holes in the top by means of ladders. The smaller dwellings had two or three, and the larger from five to six, entrances of the kind. Several hundred persons would occupy one of these houses. They were divided by partitions of stakes, each space being appropriated by a family. No fires



Aleutian hat.

were made in these *yourts*, and they were lighted by oil lamps made of hollowed stones. They were generally so warm that the inhabitants sat nearly naked in them. They slept under grass mats, and their párkas. "When they wished to warm themselves in cold weather," say the old voyagers, "they made a fire of dry grass and stood over it"! The men practised the tonsure, while the women cut their front hair off in a line parallel with the eyebrows, and tied the rest in a knot on the top of the head. Tattooing was practised; the men made three holes in the under lip and one in the cartilage of the nose. Both sexes wore a short bone cylinder in the nose, placed so as to distend the nostrils. In the middle incision below the mouth they wore a rounded or flat

piece of bone or stone. In those at the corners of the mouth they wore a peculiar labret. These labrets were exactly the shape of the article which a sailor calls a "cleat," somewhat like a letter T very much depressed and elongated at the sides.

Some of the men wore their beards, others pulled them out by the roots. They also pierced the ears and wore bone ornaments in them.

The most respected and influential were those who were most successful in the chase. The great ambition of the Aleut was to be a great hunter. Those who were unsuccessful were looked upon with more or less contempt. The number of wives was not limited, except that the best hunters had the greatest number. This seldom exceeded four. These women were at the disposal of visitors or travellers, guests of the husband, and were sometimes bartered away for anything which was greatly desired. There was no marriage ceremony. The women made their needles of the bones of birds' wings. The weapons of the men were bows and arrows, lances and darts, which they threw skilfully to a great distance, by means of a hand-board. Both darts and arrows were feathered; the shafts were often of several pieces of wood, neatly joined. They were tipped with slate or flint, sometimes with bone, and afterward with iron, which they obtained from the Russians. No metal except native copper was found among them. They also used stone hatchets and chisels, and made a kind of shield of wood and sea-weed, which they used in war. They caught cod and halibut with bone hooks and sealskin or sea-weed lines. They were improvident, and often suffered severely from hunger. Their food consisted of the flesh of the sea-otter and fur seal, the blubber of the whale and sea-lion, fish, wild parsnips, frittilaria, berries, snake-root, shellfish, and some kinds of fucus or sea-weed. These were generally eaten raw, or sometimes were cooked over a fire, between two hollowed stones cemented with clay.

They were not uncleanly in their habits, though their ideas of modesty were very different from ours. Both sexes bathed together frequently in the sea. Young children were usually fed with raw meat. If an infant cried, even in winter, it was carried to the seashore and held naked in the water until it became quiet. This made them hardy and insensible to cold, and they

went barefoot throughout the winter without inconvenience. They were fond of dances and festivals, which were kept up through the month of December. Whole villages were entertained by other villages. Successive dances of children, naked men beating drums, and women who were curiously attired, were usually followed by the incantations of the shamáns. This was followed by feasting, and then the ceremony was over.

If a whale was cast on shore, the natives assembled with joyous and remarkable ceremonies. They advanced and beat drums of different sizes. The carcass was then cut up, and a feast was held on the spot. The dances had a mystic significance. Some of the men were dressed in their most showy attire, and others danced naked in large wooden masks which came down to their shoulders, and represented various sea animals.

They had religious dances and festivals in December. During these, images or idols were carried from island to island, and strange ceremonies, of which we have only dim traditions, were performed in the night. Some of these apparently resembled the Eleusinian mysteries. Hundreds of women, wearing masks, are said to have danced naked in the moonlight, men being rigidly excluded and punished, even with death, on intrusion. The men had similar dances. An idea prevailed, that, while these mystic rites were going on, a Spirit or Power descended into the wooden idol. To look at him was death or misfortune; hence they wore large masks carved from drift-wood, with holes so cut that they could not see anything before or above them, but only on the ground near their feet. After the dances were over, idols and masks alike were broken up and cast away. A further illustration of the same idea was shown in the custom of placing a similar mask over the face of a dead man. These masks were held by a crossbar between the teeth and a loop passing round the head. The above sketch is taken from one which was found in a cave on Unaláshka. It is, without doubt, eighty years old, for since the advent of the Russian priests these relics have been destroyed by them wherever found. They also destroyed all records of the ancient rites as far as possible.

Aleutian mask.

The method of burial among the Aleuts was as follows. Poor persons were wrapped in their clothes or in mats, and laid in clefts of the rock, with a mask over the face. The bodies of the wealthy were placed, with their clothing and arms, in a sort of boat or cradle made of driftwood. The cradle, or coffin, was slung to a horizontal pole, which was supported by two uprights, and it was left hanging in the open air. Much grief and long-continued lamentations occurred after a death. It is even related that mothers sometimes placed the bodies of their dead infants in a carefully carved box. This was sometimes kept near them in the yourt, and the mother would watch it with the greatest tenderness, wiping away the mould and adorning it with such ornaments as she could procure.

Fire was obtained by striking together two flints, which had been rubbed with sulphur, over lint strewn with the same substance in powder. It was obtained from the various volcanic peaks. They were very fond of amber, which is found in the lignite beds, and used colored earth for pigments.

These customs are now almost entirely passed away. The Aleut usually dresses in clothing obtained from the Russians, and they no longer use their underground houses. In some places they have cultivated potatoes since the beginning of the century, but their food continues to be in great part composed of the flesh of sea animals. All speak some Russian, and many of them can converse fluently in that language. They are all nominally Greek Catholics, but there is very little knowledge of the true principles of Christianity among them. Veniamínoff established schools among them, but his successors have not been so faithful, and of late years the schools have been much if not entirely neglected. Hence, while most of the adults can read the ecclesiastical characters used in the books of the church, the children are ignorant of them. While farther advanced than any other native American tribes, they are far from civilized, except in dress, and require careful guardianship and improved methods of education to preserve them from the rapacity of the traders. They are greatly addicted to the use of snuff and of liquor, when they can obtain it. For the latter, they would sell themselves as slaves, or dispose of all their property. While somewhat dull or stupid, they are excessively obstinate, and exhibit little emotion

of any kind. They are very obedient and sensitive, and would rather commit suicide than receive a blow. Crime is almost unknown among them, but there is a strong sensual element in their characters. Their principal occupation, beside obtaining food, is hunting the sea-otter and killing the fur-seal. The former is found at some distance from land, and is hunted by large parties in their bidárkas. They follow the animal with these boats, striking it with lances until, wearied out, it becomes an easy prey. The following account of the character of the modern Aleutians is condensed from Veniamínoff's description. It is marked by a partiality which he openly confesses, and which is mainly due to his own goodness of heart and love for the people whom he had labored so long to instruct and elevate above their previous melancholy state of degradation and ignorance.

The reality of their devotion to a religion which they do not comprehend may, however, well be doubted, and is distinctly denied by Golovín and other Russian authorities. Much must be allowed for the religious enthusiasm of the writer.

"The Aleutians are remarkably uniform in character; those who exhibit any striking differences, on inspection, invariably prove to be of mixed blood. If we consider that all the Aleutians together do not number over fifteen hundred souls, and that they are widely scattered on distant islands, often not seeing their neighbors in a lifetime, this uniformity is the more remarkable.

"It is to be noticed among even these half-breeds, that the character of the mother is ever the stronger, almost always effacing the traces of the foreign father's blood among the Creoles. Their most conspicuous point is their piety and their attachment to their religion. Their original Pantheism has entirely disappeared even; their songs and dances are now quite different from those described by the early voyagers. The idolatrous custom of dancing with masks on, in their secret rites, has passed away.

"The Aleutians fulfil all (church) duties imposed on them with pleasure, punctuality, devout humility, and the fear of God. During my ten years' stay among them I never met one who was an exception. I do not mention fasting, for they are accustomed to fasting from childhood, and their attention during service is unflinching, though they *do not understand a word* of the whole rite. But nothing has touched me more than their zeal, I might say their hunger, to hear the word of God.

"It may be said that the Aleutians became Christians through timidity and credulity, and because converts were exempted from three years'

tribute; though this might have prevailed on them to become converts, it would not have made them such faithful and zealous followers of all the precepts of the church. It must also be said that the new religion must have seemed rigid and harsh, limiting them in their dissipations, and prohibiting polygamy. Besides, their neighbors, the Kaniágmuts, had also a religious belief, and still retain it, giving it up only with reluctance.

"It is the custom of the Aleutians for the successful hunter or fisher, particularly in times of scarcity, to share his prize with all, not only taking no larger share, but often less than the others; and if he has forgotten any one at the distribution, or any one arrives too late, he shares the remainder with him. All those in need of assistance hasten to meet the returning hunter at the landing, and sit down silently by the shore. This is a sign that they ask for aid; only the infirm or orphans send persons to represent them, and the hunter divides his prize without expecting thanks or restitution. He rarely receives other thanks than the expressive 'ach' of the recipient. If any of those on shore obtain berries or roots (which are never divided), such persons do not go to the landing, that they may not be counted among the needy. This generosity evidently comes from the heart.

"During my ten years' stay in Unaláshka not a single case of murder has happened among the Aleutians. Not an attempt to kill, no fight, nor even a considerable dispute, although I often saw them drunk.

"It is a remarkable thing, almost unparalleled, that among fifteen hundred people (the minimum) in forty years (equal to sixty thousand in one year) there has not occurred a single capital crime! This is the case with the Aleutians since the introduction of Christianity.

"If any one is injured or offended he never uses force to defend himself, and rarely complains, but leaves the offender in silence. His only revenge is to fix on his persecutor some apt nickname, but he never will reproach him. Even when the children get into dispute among themselves (a rare occurrence) they do not fight or scold each other, but reproach each other with the shortcomings of their parents.

"One reason may be, that they have no oaths or seriously opprobrious epithets in the language. Nothing offends an Aleut so much as an undeserved epithet, especially when in Russian. It is regarded as an extreme disgrace. The Aleuts show no tendency to theft. This is proved by the total absence of locks of all kinds; everything with them stands open. It must not be said that they never steal, almost every one confesses to it, but their stealing is so trivial that it hardly deserves the name. An Aleut might take a few leaves of tobacco, he would probably also take brandy if he could get it, rarest of all he takes food, but never any other object, be it ever so tempting.

"I believe the honesty of the Aleut is owing to the fact that he is always contented, no matter what his position may be.

"The most obvious trait in the Aleut is his patience, — a patience bordering on insensibility. Hardly any oppression or hardship will move him to complain. In famine it is nothing to him to be without food for three or four days. Even then he manifests neither by word nor sign that he suffers. When interrogated, no word crosses his lips, at the utmost he smiles! If the famine continue, he thinks more of his small children than himself; everything he can find is for them. Even the children show at such times a most modest patience. One would think that an Aleut, after several days' fasting, would fall upon food with the greatest greediness. On the contrary, after having finished what he has to do, he puts the first morsel into his mouth, as one who, after a comfortable breakfast, sits down quietly to his dinner.

"When sick, even the most vehement pain does not produce a complaint. Sometimes when hunting he will himself be caught in some hidden trap. In such a case the barbs can never be withdrawn. The stick to which they are attached must be removed, and the barb pushed *through* the flesh. To this he submits without a murmur, or even, if alone, performs the operation himself without flinching. Such wounds generally heal readily under a treatment of perfect quietness and abstinence from food for several days, which is their invariable remedy.

"On long journeys afoot, or on the sea, the Aleut is slow and deliberate, but, on the other hand, he keeps in motion all day, or even till he sinks from fatigue. In some cases they will travel from seventeen to nineteen hours, or even over twenty-four hours by sea, without rest. Before they start on such a journey they eat nothing in the morning; as they say, that they may not be thirsty or short-winded. Formerly the Aleutians, like the Koloshes, were in the habit of bathing their children in the sea, to inure them to exposure, even in winter; but since 1795 this custom has gradually disappeared.

"The Aleut is very susceptible to joy and sorrow, though he accepts the former with great equanimity, while he bears the latter with patience. He is never known to sigh or groan or shed tears. The latter, even among the women, is almost unheard of.

"He never will show immoderate joy; no surprise or sudden fortune can move him to it. A certain feeling of comfort, it is true, appears on his face, but he remains quiet, moderate, and grave.

"But are they then quite insensible and incapable of emotion? Certainly not, the opposite is shown, by their tender love for their children, and the fact that a look of contempt can offend in the highest degree.

"They are quite as indifferent in regard to gain as in other desires. Contented with very little, they desire only such things as are useful, and beyond that they care not to accumulate.

"Their manner of conducting a commercial transaction deserves notice. The Aleuts never transact business with each other personally, but always through a third person, who is called *Tayának*, and is generally a young person. Whoever wishes to sell anything sends it by this agent into another house (yourt), particularly if strangers are present.

"The agent, in coming into the house, says, 'Here is the *tayák*' (salable object), without mentioning the owner. The buyer looks at the object, asks what is wanted in return, keeps the article, and sends as much as he likes of the article required in return. The agent takes this to the seller, and if he is satisfied the bargain is concluded; if not, he proposes a new exchange, or an additional quantity of tobacco or other ware, to boot. If the buyer does not agree he returns the article, and some one else makes an offer. They never bid over one another, and, however long the barter may last, the buyer and seller never know each other's names.

"This custom of buying and selling among the Aleuts is of great age, and has been preserved without change. The women never trade, either among themselves or with the men.

"The unselfishness of the Aleut is proved by his conduct in the chase; for instance, otter-hunting. It is almost an impossibility for one hunter, or even one boat-load, to kill an otter, unless by a lucky chance the animal is hit exactly in the eye; for which reason the association of several boats (*bidarri*) is absolutely necessary. The animal, according to an old custom, belongs to the hunter who first hit it; or, if several at the first shot may have wounded it, it belongs to the one whose missile struck nearest the head.

"The otter is found at sea, at some distance from land. A number of bidarrás — six at least, and generally more, sometimes fifty — form a large circle, remaining perfectly quiet, often out of sight of land or enveloped in fog. The otter rises, perhaps is struck, dives, and all are expectation to discern him on his reappearance. One otter often rises many times before he is killed. After he is once struck, however, the others gain nothing by his death; only the hunter who first wounded him can claim the skin. The others get nothing unless they need and ask for a little of the flesh, which is exceedingly tough, strong-flavored, and almost uneatable. The Aleut takes great pleasure in hunting, and is perfectly satisfied if he can kill a wounded animal, though he can

claim no share in it. It often happens that an Aleut who has killed several otters gives one or two to some sick or poor person, or to some one who has killed nothing, asking no return for it.

"No one is esteemed among them because of his wealth, only as a more daring, skilful, and courageous hunter. Any one who does not possess these qualifications, be he ever so wealthy, is mocked by his companions.

"The Aleut is extremely tenacious of purpose, even to obstinacy. If he decides to do anything, physical impossibility only can deter him; he reckons not loss of health, nor the fact that he will gain nothing by it; neither flatteries, promises, nor expectation of reward will move him. Absolute orders from a superior, it is true, will be heeded, but slowly and with the greatest reluctance imaginable. The Aleut is very cautious in binding himself in any way. He does not flatter nor make empty promises, even in order to escape reproof. But if he has once promised a thing, one can count with certainty upon it. He promises and gives away without expectation of reward. If he makes a wealthy person a present, he never expects a return. If he receives a gift, he accepts it, saying, '*Akh!*' which means thanks. He is satisfied if he receive nothing, especially if he is thanked; but he never asks for anything in return. If he promises anything, he regards it as no longer his property, and he does not make use of it, even in cases of great necessity.

"Visiting the island of Úmnak, an Aleut, by the name of Taraxánoff, gave me a pair of dried flounders. Although there was no want of provisions, I accepted them; for to refuse a gift, above all, a small one, is an offence; he would consider himself despised, or, as he says, 'not loved.' As there was abundance of provision, my oarsmen forgot the fish; but, after we had gone, Taraxánoff found and kept them, in order to return them when we met again. Up to January there was no opportunity. In the mean time he and the whole settlement were starving in November and December, so that the whole village was supported by a single bidárra leader. Notwithstanding my Aleut had to support a numerous family, he did not touch the fish, and in January conscientiously sent them to me. Such cases are not rare among the Aleuts, they do not consider them anything remarkable.

"Although they express no great gratitude for favors, and are chary of expressions of thanks, they do not forget kindness, and endeavor to express their thankfulness by deeds. If any one assists an Aleut, and afterwards offends him, he does not forget the former favor, and in his mind it often cancels the offence.

"With all their caprice the Aleuts are very tractable, obeying their superiors blindly, though certain death awaits them.

"The following instance affords proof of the above statement: —

"In 1795 the captain of a bidarrá, named Vásaroff, a Russian, had been on Ámak Island, near False Pass, hunting sea-lions with some Aleuts. After finishing his business he wished to cross to the mainland, when the old Aleuts told him that he might put to sea, but that the surf would not allow him to land in Aliáska. He did not mind their warning, either because he was in haste or because he did not believe them, but resolved to put to sea, and allowed only the free Aleuts to remain behind with their boats.

"Those who were in the Company's service took leave of their countrymen like men who never expect to see one another again; and they made some disposition regarding their property, until Vásaroff, annoyed by the crying of the women in the other boats, called out that they were cowardly, superstitious, and stupid. What followed bore out the fears of the Aleuts. The bidarrá, at the distance of three quarters of a mile from the very flat coast, was swamped by the surf, and all on board drowned.

"These people detest lying, and never spread false rumors, although they are credulous and fond of repeating stories which have been told them, but without adding to them. They are very much offended if any one doubts their word.

"They are also very averse to speaking of things which should be kept secret, or which they consider should not be told. For this reason it is impossible to ascertain anything at present about their former religious customs.

"On the other hand, they are very fond of relating events to each other which strike them as ludicrous.

"They never boast of their exploits, and despise hypocrisy in every respect.

"The Aleut knows nothing of what civilized nations call modesty. He has his own ideas of what is modest and proper, and adheres to them; while we should consider them foolish. He is bashful if caught doing anything unusual among his people, or when he fails to kill an animal under favorable circumstances. He is ashamed to step into the centre of a large circle and dance, even if he is an adept at it. He does not like to address his wife in the presence of strangers, nor to ask her for anything, even if he needs it badly. He is bashful if he must buy or sell anything for himself, or when praised in the presence of a person whose opinion has any value for him. But he does not blush

when bathing among strangers, as is the universal custom, even among women, nor at appearing without clothing among people. The women are ashamed if they cannot sew or dance; they blush to caress their husbands, or even to address them before strangers; but they bare the breast for their children without hesitation, and bathe with all the inhabitants of the village.

"The Aleuts are not inhospitable, but they practise hospitality in their own way. They meet every stranger at the landing-place, though rarely saluting them by word or sign, except where they have learned the custom, daily becoming more universal, from the Russians. If the stranger has a relative or intimate friend he goes to him; if not, no one will invite him, but all are ready to receive him; he can choose his quarters himself. Then he is entertained in the best manner; the woman of the house takes care of his clothing, mends his kamláyka or whatever stands in need of repair; but she is not obliged to receive him, as was formerly customary. They never think of asking their guest for anything, let him stay as long as he may; they even provide him with food of every kind when he departs. Those who have come in contact with the Russians have become used to invite each other on festive occasions, — birthdays and the like. At such times everything is put upon the table that can be had. Stores collected with the greatest trouble and fatigue disappear in an evening, and even if the host has not a mouthful for the morrow he esteems himself fortunate to have had so many visitors. Parental and filial affection are strong traits of this people.

"The children are often well fed and satisfied, while the parents almost perish with hunger. The daintiest morsel, the best dress, is always kept for them. A child has never been known to injure its parent. On the contrary they often give up the most advantageous positions, that they may see them again, or take care of them in old age.

"Two of the most intelligent Aleuts, who had been taken to St. Petersburg, who were beloved by their superiors and comrades, and making much money by exhibiting their skin boats on the Neva, left everything, that they might see their aged mother again, and take care of her in her old age. One of them, Pors nikoff, who had become much attached to Russia, has lived with her since 1820, and tries to insure her every possible comfort, in the most tender manner. He is now (1834) fifty years old, and with his wife bears with exemplary patience all the discomfort caused by an old, sick, blind woman. Such instances are not rare. I only mention this because his tender, truly pious care of his mother has often moved me to tears.

"The Aleut is emphatically undemonstrative, no politeness must be

looked for from him ; a bright look, zeal in performing a service, and a peculiar intonation of his 'akh,' alone show his attachment to a person.

"They are slight talkers, even keeping silent for a whole day, or even longer, particularly if dissatisfied in any way. Still, in the long evenings they recount their hunting adventures of the day, often not leaving even the slightest item untold. In transacting important business they use few words ; the toyón or elder explains the matter to them, a short yes, or no, and the matter is settled.

"They are naturally timid, punishment of any kind being unknown among them. Their former mode of war showed that there was very little 'fight' in their composition, being a secret conspiracy, carried out through an ambush or sudden surprise, which, if not successful, was followed by a speedy retreat.

"They never dispute, not even when convinced they are right ; if doubt be expressed they are silent, or answer only, 'I do not know ; you are certainly better informed.'

"They are credulous in regard to things which they do not understand, but they are apt to read a braggart better than he can tell ; although they never express disbelief to his face, yet they make merry over him in his absence. Naturally inclined to be just, the Aleut feels deeply an undeserved injury, and I am inclined to agree with some travellers who say the Aleuts were a very revengeful people. The wars raging before the advent of the Russians, and the frequent attacks to which the latter were subject, show this to be true. Now it is quite different ; since the introduction of Christianity no instance of revenge has been known. The only satisfaction they allow themselves is an absolute silence toward the offender, till that person has repaired the wrong.

"The Aleuts are very dirty, though they wash daily, and are fond of bathing. Dirt is piled up close to the yourt ; they prepare their food very carelessly ; the household utensils are never washed. The children are usually dirty, with unkempt hair, and the women are very disorderly, dirty, and careless. Their poverty, it is true, does not admit of much cleanliness. A man who has only one párka, which he uses at once for clothing, bed, and blanket, cannot keep always clean. He who has eaten sour, fermented food from his childhood, with the disgusting smell of which he is perfectly familiar, cannot hate dirt. I believe that their olfactory organs must become quite obtuse. Many Aleuts, however, particularly those who have been much in contact with the Russians, form praiseworthy exceptions, and have improved their dwellings so that strangers may enter without disgust.

"They are bad housekeepers, lavish when food is plenty, and in consequence starving in spring. Some have commenced gardens, but this also they follow negligently. February, in their language, is the 'hunger month.' Their improvidence is partly owing to their chief dependence being the sea, which always offers them something, or the tundras, which furnish them with roots. If both fail them, there remain only patience and resignation.

"Yet there are some exceptions, and particularly one settlement in Aliáska, called Paulosk. They use their provisions with a praiseworthy economy, and hence seldom suffer from want. They were the first to learn from the Kadiák missionaries the cultivation of the potato, which they have carried on so well since the commencement of this century that they plant annually, and have always saved the seed. They have more leisure to themselves than most Aleuts, as there are no Russians in the settlement.

"They are universally reproached with laziness. It has been even said that an Aleut will lie and suffer from thirst for hours, unless some one sends him after water. I do not doubt the truth of it in some cases.

"It must be remembered that their indolence depends on circumstances, and that they are as active and busy when the hunting season comes, or they are at work carving, as they are indolent at other times. Their indolence while working for the Company is as great as their activity when working for themselves; so that under different circumstances they appear like different individuals. Those who have lived among the Russians are great drunkards, and they are all passionately addicted to the use of tobacco.

"They incline to sensuality. Before the teachings of the Christian religion had enlightened them, this inclination had full sway. The nearest consanguinity only, put limits to their passions. Although polygamy was general, nevertheless, there were frequent secret orgies, in which all joined. The strange guest shared all marital rights with his host. The bad example and worse teachings of the early Russian settlers increased their tendency to licentiousness. The introduction of Christianity abolished many of these customs (some of which had a religious significance) with polygamy; but still secret orgies were held, and the births were very much fewer than they should have been up to 1825–1827. Child-murder is very rare, the belief still being that it brings misfortune on the whole village, and that the murdered babe is heard crying every night.

"However, I am able to declare that the tendency to dissipation decreases day by day, the number of births has almost doubled, notwith-

standing there are only one fourth as many illegitimate ones as formerly; and I believe that dissipation in future, if not entirely eradicated, will be confined within very narrow bounds.

"It is to be regretted that those who have most imitated the Russian customs have always become, gradually, the most worthless and indolent, apparently losing their native virtues and acquiring foreign vices, while the dark side of their character grows rapidly darker. It may be said, however, as a consolation to the well-wishers of the Aleuts, that these individuals are very rare, and confined to the chief settlement. In such cases their patience and firmness degenerate into stubbornness and obstinacy. If, in addition, they had the means of readily obtaining strong liquors, they might easily become insufferable, or even dangerous.

"The Aleuts learn readily, almost without teaching, not only mechanical things, but those which require thought, such as playing chess. There are found among them very good joiners, carpenters, coopers, locksmiths, blacksmiths, and sailors.

"A certain Ustiakoff was considered an excellent navigator. His charts of several districts, including Nushergák, are considered pretty correct to this day (1834).

"Many Aleuts, particularly those of the Príbyloff Islands, are excellent chess-players.

"The adults are eager to learn to read, but only for the purpose of reading the ecclesiastical books of the Greek Church, although they understand hardly anything of their contents.

"It is to be regretted very much that their talent for drawing and painting has never been promoted. I am convinced that they would become artists above mediocrity. They are very skilful workers in ivory (walrus-tusks) without instruction. I saw in the possession of Baron Wrangell a number of characteristic representations of animals. They are very fond of cutting caricatures of the Russians, and often make an excellent likeness of the person intended, though very grotesque. This shows that they have vivid imaginations and faithful memories."

Aleut carving.

The talent for carving above alluded to, is exemplified by the accompanying sketch of an image, or caricature, of one of the sailors of Wilkes's Expedition. The sailor's shoes, pea-jacket, and mode of wearing the hair, are accurately represented, and the general effect is very comical, as was doubtless intended by the artist.

The Innuit Tribes.— The Innuit of Alaska extend everywhere along the coast, from Mount St. Elias northward to Point Barrow, and eastward to the Mackenzie.

The Ugalákmuts.— Beginning at the southward, this is the first Innuit tribe on the west coast of America. Their hunting-grounds extend from Icy Bay nearly to the mouth of the Atna or Copper River. We only know of their existence and mode of life by a vocabulary obtained by Mr. Gibbs from the Russian traders, and by the statements of the latter, that they form a body of some two hundred families, who chiefly live by fishing. Between them and the next tribe the Indians of the Copper River have forced their way, and hold a small portion of the coast.

The Chugáchigmuts.— These Innuit occupy the shores and islands of Chugách Gulf, and the southwest coasts of the peninsula of Kenái. They are few in number, compared with the large extent of territory which they occupy, but are described as active and warlike. They have on several occasions successfully defied the Russian traders, and have never been obliged to render personal service or tribute. The gap between them and the following tribe, comprising the north shore of Kenái and the opposite coast of Cook's Inlet, is occupied by Indians.

The Kaniágmuts.— This, the largest and most powerful tribe of Innuit on the Alaskan coast, occupies the island of Kadiák (formerly *Kaniág*) and the greater part of the peninsula of Aliáska, from Iliámna Lake to the 159th degree of west longitude. They were confounded with the Aleuts by the early voyagers, and called by the same name. They were a much more energetic and indomitable race, meeting force with force, and refusing to give up their ancient customs at the behest of Russian priests. Although time and constant intercourse with the Russians for more than a century have changed them, still the change is much less than that which has taken place among the Aleuts. Lisiánsky, who visited them in 1805, has given a full account of their former manners and customs, and from it I have obtained much of the following information.

The Kaniágmuts are of middle stature, and a complexion more reddish than that of the Aleutians or more northern Innuit. They are stoutly built, with large, broad faces, and their hair is coarse, black, and straight.

The tonsure was rarely practised among them. The women cut their hair short in front and wore it in a sort of club behind. The men sometimes cut their hair very short all over the head. The dress of both sexes consisted of kamláykas and párkies, the latter shorter than those worn by the Aleutians. The men wore a belt with a kind of apron hanging down in front to the middle of the thigh. The women used a broad sealskin belt, without the apron. Both sexes wore caps made of the skins of sea-birds, or hats plaited from spruce roots painted and decorated with grotesque carved figures. They went barefoot, except while travelling, when they wore sealskin boots. Both sexes were very fond of beads and other ornaments. The labrets were of the same description as those worn among the Aleuts. The women wore strings of beads suspended from the lower lip, and had the ears pierced all round for the same purpose. They also tattooed the chin, breast, and back. They were exceedingly fond of amber, upon which they placed the greatest value.

For provisions they relied mainly on fish and the blubber of the whale. The latter was a prime delicacy even when putrid. Shell-fish, roots, and berries also formed part of their fare. Much of their food was consumed in a raw condition.

A young man desiring to take a wife was accustomed to visit the parents of the girl he desired, taking his most valuable treasures with him. If they were satisfied with him, he made them presents until they said, "Enough." If he did not please them, he returned home with his property. There was no ceremony attending marriage; but, when food was plenty, the father-in-law usually gave a feast. The next day the husband prepared a hot bath, which is the custom of purification for him and his wife. He always lived with his wife's parents, and was obliged to serve them. This custom is still in vogue among the Aleuts. Polygamy was formerly much practised. The most revolting of the ancient customs of the Kaniágmuts (also common to the Aleuts) was that of keeping *shúpans*, or men who were dressed and brought up like females, and supplied their places. These unnatural beings so nearly imitated the manner and appearance of women, that strangers would frequently take them for such, and the Kadiák priest once nearly married one of them to a toyón or chief who came in for the purpose. Fortunately, an interpreter

came to the priest and informed him, before the ceremony was finished, that the couple he was joining in marriage were both males.

The bodies of the dead were formerly buried in the ground. They were wrapped in furs and sealskins, and large stones or pieces of wood were piled over the grave. The spectators went home as soon as the interment was over, but the parents of the deceased waited near the spot until sunset. A slave was formerly killed over the graves of the wealthy, broken beads and pieces of amber were strewn over the grave, and high poles sometimes erected. The weapons of hunters were buried with them, and the frame of a kyak placed over the spot. The relations were loud in their grief for the dead, and exhibited their mourning by blackening the face and cutting the hair short. The survivor of a married couple retired for a certain period to another settlement. When a child died, the mother secluded herself for ten or fifteen days in a small hut built for the purpose.

The same custom prevailed when a child was born, and for twenty days the mother was considered so unclean that no one would touch her, and her food was given to her on the end of a stick. When the twenty days were over, the mother and child took a warm and then a cold bath, and were then considered clean. At this time the incisions for the labrets and in the nose of the child were made. The same custom was observed by women at certain periods, and they were not considered clean until after the usual ablutions. The huts to which they retired were built of reeds and grass, and were only about three feet square.

The principal pursuits of these Innuit were hunting the seal, whale, sea-otter, and fur-seal. They also caught auks, divers, and puffins, in nets; from the skins they made clothing, and consumed the flesh. Fish were also obtained in nets, and with the hook and line.

Their weapons were spears, harpoons, and arrows. The tools used in carving and working in wood were stone adzes, sharpened fragments of shell, which have been surperseded by crooked knives, a polishing-stone, and a tooth fixed in a wooden handle and used as a gouge.

The art of carving has somewhat declined from its ancient perfection, but they still practise it.

The woman were only surpassed in their needlework by the Aleutians. They were great gamblers, and had several games, one resembling dice, and another which consisted in throwing flat pieces of wood at a painted skin. These counted according to the part of the skin on which they fell; the game was one hundred and twelve points.

The single and two-holed bidárkas have been in use since the discovery of the country. The three-holed bidárka is an invention of the Russians. All the Orarian tribes, except the Aleutians and Kaniágmuts, have single bidárkas or kyaks. The festivals and dances of these natives resembled those of the Aleutians.

Those who attack the whale, were considered by their countrymen, during the fishing season, as unclean, though otherwise they were held in high honor. They only attempted to kill the smaller species. A singular custom obtained among the whalers, of stealing the bodies of dead hunters who had been successful in the chase, and secreting them in caves. This was thought to render the possessor of such trophies prosperous in his fishery; and these caves, with their contents, were bequeathed from father to son, until the number of bodies sometimes amounted to twenty.

The houses were composed of a single large room, which answered the purposes of a store-room, work-room, and dance-house, resembling the casines of the more northern Innuit. Into this room opened the doors of the excavations in which the different families lived and slept, and were even sometimes buried. These were called *júpan*. Blocks of wood ornamented with sea-otter teeth served for a pillow, and separated the space on which the natives slept from the rest of the room. Fires were built in winter in the júpan, and they were very warm. Sealskins and dry grass served for a bed. The natives were fond of hot baths, which resembled those of the Norton Sound Innuit.

Shamánism was much practised by the Kaniágmuts, and frequently large presents were made to the shamáns, while those among the Aleuts did not receive payment for their services. Other wise men, called *kasék*, taught the children the different dances and superintended the public festivals. They were regarded as second only to the shamáns.

The Kaniágmuts trace their ancestry from the offspring of a

dog, and assert that the island of Kadiák was separated from Aliáska by a large otter, who pushed through from Cook's Inlet. At present many of them profess the Greek Catholic religion, but retain at the same time their old superstitions. Many of their habits are very dirty, while in intelligence and morals they fall far behind the Aleutians.

The Oglemuts. — This tribe inhabits the north coast of Aliáska from the 159th degree of west longitude to the head of Bristol Bay, and along the north shore of that Bay to Point Étolin. Their habits are essentially the same as those of the last-mentioned tribe, while their vocabulary differs somewhat from that of the latter. They live principally by fishing and hunting the walrus, seal, deer, and foxes ; they are few in number. They are the *Aglegmut* of Holmberg.

The Nushergágmuts. — These people inhabit the coast near the mouth of the Nushergák River, and westward to Cape Newenham. They are similar, as far as known, to the more northern Innuit in most of their customs. Their sledges differ from those of Norton Sound by being lower, shorter, heavier, more gayly ornamented, and often lined with fur. They particularly excel in carving ivory, and most of their weapons and tools are made of ivory or bone. The annexed sketch represents an ivory knife used for skinning animals and cutting up fish. They are represented as very active and energetic, fond of festivals and dances, and travelling a great deal in winter with dogs. They rely principally on deer and fish for their food. They are particularly fond of small white beads and tobacco. Some of their casines, or dance-houses, are said to be among the largest structures of their class in Russian America. They call themselves Nushergágmut, and are the *Kijataigmut* of Holmberg.

Ivory knife.

The Kuskwógmuts. — These inhabit both shores of Kuskoqúim Bay, and some little distance up that river. They differ little from the last-mentioned, except in their vocabulary. Baer has stated that some of the more southern tribes of Innuit have intermarried with the Indians, and that an intermixture of words has taken place between the two languages. The first statement is quite unsupported by the facts, and the latter is probably due to

a miscomprehension of his informant, who probably mistook the trading jargon, in use among all western Innuit who have any trade with the Indians, for the true language of the former. At all events, I have so far found no traces of Indian words in the numerous Innuit vocabularies which I have examined, nor *vice versa*. In regard to this tribe he also makes some assertions which are not borne out by the accounts which I have received in regard to them, from Russian traders who had spent years on the Kuskoqúim, especially Iván Lukeén, who is elsewhere mentioned. I refer to the statement that all the adult able-bodied males sleep in the casine, or dance-house, and that the only women who are admitted to the same place during festivities are those who have been especially initiated. I have good reason to believe that the customs of this tribe closely resemble those of the Norton Sound Innuit, which are elsewhere described, and that the information on which Von Baer's statements are founded must have been untrustworthy. These natives call themselves Kuskwógmut, and are the *Kuskutchewak* of Baer and Richardson, and the *Kuskokwigmut* of Holmberg, who has also confounded them with parts of other tribes, especially the following.

The Agulmuts. — This tribe extends from near Cape Avínoff nearly to Cape Románzoff. There are also a number of settlements of the same tribe on the island of Núnivak. They are comparatively little known. The information which I have been able to gather would indicate that they are very shameless and filthy, extremely fond of tobacco, and remarkable for the beauty of their workmanship in ivory. Their clothing is largely composed of foxskins; their kyaks, while larger than those of the more northern tribes, are well made and attractive in appearance. Foxes, oil, and ivory are their principal articles of trade. A kantág or wooden dish, which was obtained at Núnivak by Captain Smith, was neatly carved and inlaid with lozenges of white stone, resembling gypsum. They wore labrets of the same material. Their food was principally fish and seal, and they appeared to be very destitute of iron and other articles introduced by traders. Their ivory weapons were of great beauty, and some specimens of hollow carving would tax the resources of the most skilful civilized workman to equal. They should not be confounded with the Óglemuts of Bristol Bay. Holmberg gives their boundaries incorrectly.

The Mágemuts. — These inhabit the vicinity of Cape Románzoff, and reach nearly to the Yukon-mouth. They resemble their southern neighbors more nearly than they do those to the north of them. The peculiar labrets worn by the women are elsewhere described. They are tall, finely formed, and have very fair complexions. Blue eyes are not unknown among them, but their hair is black and their beards are very light. They are fond of ornaments, especially large glass beads. Tobacco is greatly esteemed, especially the Circassian variety. Deer are uncommon in their district, and they live principally on fish and birds. Foxes and mink are the most abundant furs among them. They celebrate their dances and festivals with great pomp and display. Some of their festivals last for weeks. They call themselves Mágemut, meaning "mink people."

Wood is very scarce in the Mágemut country, and is an article of trade. Holmberg calls them also *Magágmut*, and fixes their boundaries wrongly.

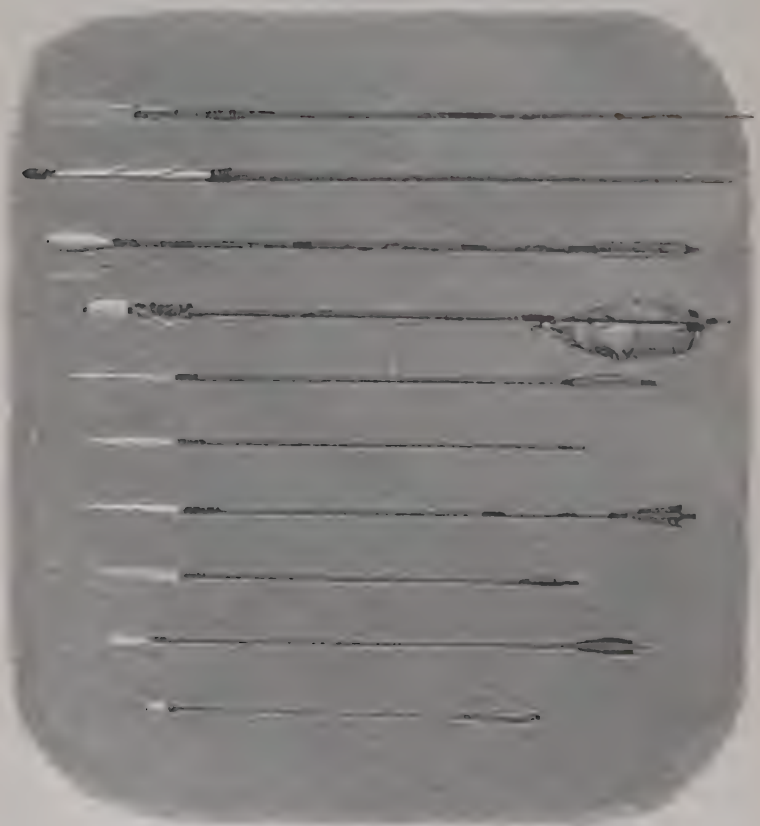
The Ekógmuts. — These inhabit the Yukon delta from the Kipníuk to Pastólik, and ascend the river as far as Mankí, some distance above the mission. Their habits and customs are elsewhere described. Those who inhabit the Kwíkhpak slough call themselves *Kwikhpágmut*, a name sometimes applied to the whole tribe. A noticeable feature in many of them is the extreme hairyness of their persons. Many have very strong black beards and hairy bodies. They include the *Kwikhluágemut* and *Kwikhpágmut* of Holmberg.

The Unaligmuts or *Únalect.* — These occupy the coast from Pastólik to Shaktólik. They are elsewhere described at length. They include the *Tschnágmut* and *Pastóligmut* of Holmberg. The latter is only a local name, the former is of very questionable authority, and not in use among any of them. They have also been erroneously called *Aziágmut.*

The Máhlemuts. — These Innuit occupy the coast of Norton Sound and Bay north of Shaktólik and the neck of the Káviak Peninsula to Seláwik Lake. Their most eastern village is *Áttenmut*, and their western boundary the river which flows northward into Spavárieff Bay, Kotzebue Sound. Their mode of life is fully described in the first part of this volume. They are the *Maliegmut* of Holmberg.

The Kaviágmuts.—These occupy the Kaviak Peninsula and Sledge or Aziak Island. They have also been previously described. Many of them pass the winter in the southern part of Norton Sound, and there is a large Kaviak village at Unalaklik. Their principal Omäylik or chief is *Kamälein*, well known to many Arctic voyagers. Their principal villages are *Nûkhmut* at

ARROWS AND LANCES.



A. Ekogmut bird spear. B. Aleut harpoon-lance. C. Nushergagmut seal spear.
D. Seal spear of northern Innuit. E. Mahlemut arrow. F. Tuski arrow.
G. Aleut arrow. H. Kaviak arrow. I. Aleut fish arrow. J. Unaleet bird arrow.

Port Clarence, and *Kuik'ägmut* on Golofnina Bay. They call themselves Kaviägmut; they are the *Antigmuts* of Holmberg, and the local name, *Asiägmut*, of the inhabitants of Aziak Island

(who travel extensively) has been applied to other tribes. Among the members of this tribe, as we go northward, the tendency to theft and violence appears more strongly, and may be due, in part, to the introduction of alcohol by unscrupulous traders. The Innuit of Norton Sound and to the southward exhibit this tendency in a much smaller degree.

The Oke-ógmuts. — This name is universally applied by the Innuit to the small but active and energetic tribe who inhabit the islands of Bering Strait. They are essentially the same as the Kaviágmuts. They carry on the trade between the two continents, and visit the island of St. Michael every year for the purpose. I have also heard the same name applied to the inhabitants of St. Lawrence Island.

The Western Eskimo. — This name has been very generally applied to the Innuit who inhabit the coast from the mouth of the Mackenzie westward to Point Barrow, and south to Kotzebue Sound. In the absence of accurate knowledge I have preferred to retain it, rather than use the local designations which are given by Simpson as tribal names. Parties of Kaviágmuts and Máhlemuts visit Point Barrow nearly every season, and may have been confounded with the indigenous Innuit by the few explorers who have travelled in that direction. Richardson says, that from the Mackenzie River to Barter Reef they call themselves *Kangmali-Inniin.* Among the Innuit of Norton Sound most other names are derived from names of places ; the tribal designations appear to follow a similar rule. Thus, most of the geographical names end in *ik* or *ak*, as *Kavi-í-ak*, a tract of country. From this we have *Kaviágmut* (noun), a town or village in that country ; *Kavi-ázak* (noun), a river passing through it ; *Kaviágemut* (adjective singular), the tribal name of an individual from that country ; *Kaviágmëun* (adjective plural), a number of individuals from that country ; and finally *Kaviágmut Innuit*, the people of the country, collectively. The *e* which follows the *g* in the adjective is frequently slurred so as to be hardly noticeable. *Énuk*, *Ényuk*, or a word of the same derivation, means a "man" ; *Ényüin* means "several men" ; *Innuit* means "people" collectively. The termination *mut* in a substantive sense means a village at the place or on the river to the name of which it is added. In an adjective sense it means the people of that village, as we would say *Indiana,*

Indianapolis, Indianapolitan. It is generally very local in its meaning, although it is also added to the tribal names. *Kweek*, meaning river, compounded with some adjective, usually forms the name of any river, and the same may be said of *Kikhtuk*, an island.

The Point Barrow tribe are said by Richardson to be called *Nuwungmëun.* This is the plural of *Noókmut*, which is the local designation of the Kaviágmuts of Port Clarence, who annually visit Point Barrow. These northern Innuit are very few in number. They are said to be treacherous and addicted to theft. Simpson mentions that their thumbs appeared to be disproportionally short. The same may be true of the Norton Sound Innuit; at all events, no white man can wear one of their mittens comfortably until the thumb is lengthened. The northern tribes are not so proficient in embroidery as those of Norton Sound, and their garments are much more plainly made and deficient in trimming. The former still use many articles of stone or flint which the latter have rejected for bone or iron. Simpson, on the Arctic coast, saw dishes made from the tusks of the fossil elephant, and the Innuit of Back's Great Fish River are noted for their stone dishes or kettles.

The Innuit formerly extended much farther up the Mackenzie than at present, and have been driven out by the Indians within historic times.

Dr. Otis, of the United States Army Medical Museum at Washington, who has handled as many aboriginal American crania as any modern ethnologist, says that the skulls found in the northern mounds have the same peculiarities which distinguish all Orarian crania, and that both are instantly distinguishable from any Indian skulls.

The Norton Sound tribes have various names for the whites, one of which means "men with white eyes," and another "men who wear hats." The common designation of the Russians is *Kossák*, which is evidently derived from Cossack. The Americans are usually called *Amcricáni.* Some Kanáka words are in use in the jargon through which barter is carried on with the traders, who employ many Sandwich-Islanders as sailors. Some of these, and also some Russian words, have found their way into recently published vocabularies, which are also inaccurate in other respects.

Indian Stocks (*Stämme.*) — There are two stocks in the territory of Alaska. They are the *Thlinkets* and the *Tinneh*. The former are confined to the coast, and the latter occupy the greater part of the interior.

The Thlinkets. — This stock comprises the *Chimsyáns*, the *Kygáni* or *Háidahs*, the true *Thlinkets* or so-called *Kolóshes*, and the *Yákutats* or tribe which inhabit the vicinity of Bering Bay. There are perhaps other tribes of the same stock to the south, which, as well as the Chimsyáns, are outside of the limits of this work. The *Ugalénzes* have also been referred to this stock by some authors.

The Kygáni. — These Indians have their head-quarters on Queen Charlotte's Archipelago, but there are a few villages on the extreme southern part of Prince of Wales and the adjoining islands. They are a very fierce, treacherous race, and have not been improved by the rum and fire-arms sold to them by the Hudson Bay Company at Fort Simpson. They are noted for the beauty and size of their cedar canoes and their skill in carving. Most of the stone pipes, inlaid with fragments of Haliotis or pearl shells, so common in ethnological collections, are their handiwork. The slate quarry from which the stone is obtained is situated on Queen Charlotte's Island. They are frequently called *Hýdahs* or *Háidahs*.

The Thlinkets or *T'linkets.* — These are divided into two tribes, whose customs are almost identical and whose vocabularies differ but little. Their tribal names are indicated by the appellation of the district, to which is added the syllable *kwán*, meaning people. *T'linkit* means a man, according to Wrangell, but this does not appear by the vocabularies.

The Stakhín-kwan. — These are the inhabitants of the mainland near the Stikíne River. The latter name has been modified by English mouths from *Stakhín*, the native designation. Their manners and customs are identical with those of the inhabitants of the archipelago, but they consider themselves a distinct tribe, and the two have had frequent wars. The Stakhín-kwan do not penetrate far into the interior, but extend northwest as far as Lynn Canal, and south to the Portland Channel. Here they are bounded on the south and east by the *Nasse* Indians and the *Chimsyáns*.

The Sítka-kwan. — This includes the inhabitants of Sitka Bay, near New Archangel, and the neighboring islands. They have coarse black hair, small eyebrows, and fine large eyes. Their complexion is dark, teeth white and good, hands and feet soft and small. They are indolent by nature, but fond of dress, and exert themselves to hunt and trade in order to be able to dress well. They have generally adopted a style of dress somewhat civilized in appearance, and it is now impossible to find any of them dressed in their original style, which is quite forgotten. At present men and women wear much the same clothing. It consists of a long shirt or chemise and a blanket ornamented with buttons, which covers the whole body. Some of them weave variegated blankets which display some artistic taste. Those at Sitka have more variety in their apparel than others who are farther from a trading-post. They always go barefooted in their uncivilized condition, and the moccasins which they offer for sale are purchased by them from the Tínneh tribes of the interior. They all paint, and, while naturally not ugly, become fearfully so in consequence. Lampblack or vermilion mixed with oil is rubbed over the whole face, and the color is removed by small brushes, leaving patterns on the skin. The rich paint every day, while the poorer natives renew the paint only when worn out. They perforate their noses, wearing a ring adorned with feathers. They make a succession of perforations all around the edge of the ears, which are ornamented with scarlet thread, sharks' teeth, or pieces of shell. Each hole is usually the record of a deed performed or a feast given, by the person so adorned.

On arriving at the age of puberty the girls are considered as unclean, and are strictly confined to a small hut, formerly for a year, but at present near Sitka the period has been shortened to three months. Only the girl's mother and a female slave can carry food to her while secluded, and she wears a broad-brimmed hat to protect the sky from pollution. At this time the lower lip is pierced, and a silver pin shaped like a nail is inserted. The broad head prevents the pin from falling out. This is a sign of freedom; the poor slave girl has no right to such an ornament. The gait of the women, kept imprisoned at this critical period of their lives, is weak and unsteady, forming a striking contrast to the proud, erect bearing of the men. On releasing a rich Thlinket girl, a

great feast is given. She is richly dressed and placed on a divan of otter-skins, while the slave who waited upon her during her confinement is usually freed, and all her old clothing is destroyed.

The Thlinkets migrate with the season, according to the prevalence of game or fish. The latter is their principal source of food; it is smoked in their houses, not dried in the sun, as is the custom farther north. Shell-fish are eaten raw. Fish and cuttle-fish (*Octopi*), which are common, are always cooked. The spawn of the herring in a putrid state is reckoned a great delicacy, and eaten raw or dried. Fucoid algæ are also eaten. They do not eat whale blubber, as the whale is one of their totems, but use that of the porpoise and seal. They make water-proof baskets, in which food was formerly cooked with hot stones. Fish abounds in such quantities that hunger is never necessary. Paddling among the schools of herring the natives beat the water with a pole, in which nails are fastened like the teeth of a comb, and it is rarely that every nail does not catch a fish. They fish for halibut with wooden hooks barbed with bone, and a long line made from the giant kelp. *Úlikon* (a kind of smelt) is caught in basket nets of wicker-work. These fish ascend the Nasse and other rivers about the 20th of March in prodigious numbers. The first fish is carefully handled, addressed as a chief, and a festival given in his honor. After this is over the fishing goes on, and lasts for a fortnight or longer.

The principal animals which are hunted are the deer, mountain sheep, and mountain goat. Of the horns of both they make ladles and spoons; the latter are often curiously carved, as in the annexed sketch of a goat-horn spoon-handle. They use the wool of the sheep to weave their blankets.

There are about sixteen settlements in the archipelago, which form their dwelling-places during a great part of the year. Their winter houses are massively built of large squared logs. They serve both for dwellings and purposes of defence.

Thinklet spoon-handle.

The walls are several feet thick, six or eight high, and sometimes forty feet square. The roof is of bark; there is a round hole, reached by steps, for a door, and a square one, to let out the smoke, in the roof. They rarely have openings for windows. Some of the houses are floored, and have an air of durability and comfort.

A very strong trait in their characters is their respect for their ancestors. The Thlinkets are divided into four totems: the raven (*Yehl*), the wolf (*Khanúkh*), the whale, and the eagle (*Chethl'*). The first is the beneficent spirit; while, among the Tínneh, the raven is considered to be the most depraved of all birds. The emblems which to them represent the totems are carved on every house, paddle, household utensil, and frequently on amulets or plates of native copper, which they preserve with great care, and consider to be of the greatest value. They also wear dresses on festive days which are made to resemble, wholly or in part, the animated form of the totem. High posts curiously carved are frequently erected before each house. Sometimes they are placed directly in front, so that an entrance is made through the block or log, which is often of enormous size. These carvings represent the successive ancestral totems, and are usually capped with that of the builder. They are frequently painted of various colors. The wolves are the warriors, and bear the title of *Kokhánthen*.

They derive their origin from Yehl and Khanúkh, whose children lived in huts on the mountain-side, near the Nasse River, in the interior. Their descendants dispersed, reaching the coast near Queen Charlotte's Island, and retaining the name of their parents. Their ancestral names are preserved with the greatest care.

Opposite totems only can marry, and the child usually takes the mother's totem. The child receives, at or soon after birth, a name derived from that of its mother's ancestors. This name is conferred without any ceremony. Afterward he receives another from his father's side. The last is always conferred with great solemnity and festivity. Poor Thlinkets, who have no means of giving a feast, sometimes retain the mother's name through life. A rich chief may give his name to his son at birth, but he must afterwards celebrate a feast in honor of his paternal ancestors. A father of a son who has distinguished himself is called after his

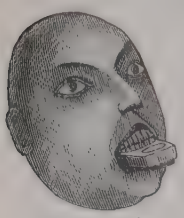
son. A distinguished chief at Sitka, having two paternal names, was baptized, thus adding another. If he had had a son, he would have been called after the child, but as he was without children, the other Thlinkets called him after his favorite dog!

Polygamy is common among the rich, but the first wife has the precedence and authority. One of the Nasse chiefs was said to have had forty wives. A lover sends to his mistress's relations, asking for her as a wife. If he receives a favorable reply, he sends as many presents as he can get together, to her father. On the appointed day he goes to the house where she lives, and sits down with his back to the door.

The father has invited all the relations who now raise a song, to allure the coy bride out of the corner where she has been sitting. When the song is done, furs or pieces of new calico are laid on the floor, and she walks over them and sits down by the side of the groom. All this time she must keep her head bowed down. Then all the guests dance and sing, when tired, diversifying the entertainment by eating. The pair do not join in any of the ceremonies. That their future life may be happy they fast for two days. Then, taking a little food to sustain life, they fast for two days more. Four weeks afterward they come together and are then recognized as man and wife. A similar course of fasting and reflection might be advantageous in some civilized communities in this era of hasty and ill-assorted marriages.

The bridegroom is free to live with his father-in-law or return to his own home. If he chooses the latter the bride receives a *trousseau* equal in value to the gifts received by her parents from the husband. If the husband become dissatisfied with his wife, he can send her back with her dowry, but loses his own gifts. If a wife is unfaithful he may send her back with nothing, and demand his own again. They may separate by mutual consent without returning any property. When the marriage festival is over, the silver pin is removed from the lower lip of the bride and replaced by a plug, shaped like a spool, but not over three quarters of an inch long, and this plug is afterward replaced by a larger one of wood, bone, or stone, so that an old woman may have an ornament of this kind two inches in diameter. These large ones are of an oval shape, but scooped out, above and below and around the edge, like a pulley-wheel. The annexed sketch of a

mask or rather carving of a female head, cut by a Thlinket workman, shows the position of the plug in the lower lip. When very large a mere strip of flesh goes round the *kalúshka* (little trough) as the Aleutians called it. This disgusting practice is similar to one in vogue among the *Botokúdos* of Brazil, and something resembling it was anciently worn by the Aleutians and Kaniágmuts. From the name which the Aleuts gave the appendage when they first visited Sitka, the nickname *Kolósh* has arisen, and been applied to this and allied tribes.



Thlinket mask.

Veniamínoff says that a certain Sicilian custom was anciently in favor among the Thlinkets, and the cavalier was usually the brother of the husband. When a husband dies, his brother or his sister's son must marry the widow. The omission of this custom has occasioned bloody feuds. If there are no male relations of the husband, the widow may choose for herself.

A seducer rarely escapes the dagger, but, if he should be so fortunate, he must render a sufficient payment in goods to the injured husband.

The women are treated with little kindness during childbirth. They are excluded from the house and placed in a temporary hut, or even left without shelter for ten days as unclean. When the child is some weeks old it is tied to a board and padded with moss, which is removed and replaced by a fresh supply daily. It is weaned when about a year old, and fed on seal or porpoise blubber at first. As soon as it can walk it is bathed in the sea daily.

They consider corporeal punishment as a great disgrace, and only chastise the child who refuses to take its daily bath.

Theft is not considered as a crime, but the loser may demand restitution if the thief is discovered.

Murder demands blood for blood; if not that of the actual murderer, at least one of the tribe or family to which he belongs.

Family feuds are not uncommon, and sometimes result in duels. The duellists are dressed in armor of raw moose or bear hide, or thin strips of wood laced together. They wear heavy wooden helmets painted or carved with their totemic emblems. The combat is carried on with knives, and accompanied with songs by

the bystanders. At a conclusion of peace, either between two tribes or two members of a family, hostages are exchanged. These are obliged to eat with their left hands for a certain period, as they had carried weapons in the right hand during the combat. Each hostage has two companions of equal rank assigned to him by the tribe which holds him.

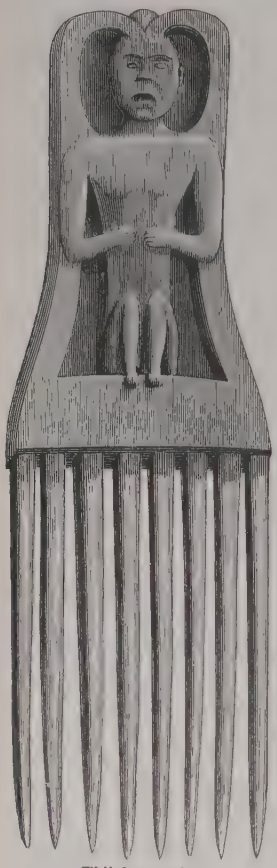
Their method of war is an ambush or surprise. The prisoners are made slaves, and the dead are scalped. The scalps are woven into a kind of garter by the victor. During war they use red paint on their faces, and powder the hair with red earth and the down of birds.

The bodies of the dead are disjointed by a person who is assigned to this special duty, and the act is performed in solitude. The remains are then burned near the house of the deceased. Poor people take their dead in a boat to some distant spot and burn them there. The bodies of the shamáns only, are put in boxes on four poles by the sea-shore. The bodies of slaves are thrown into the sea. Some time after the death of a Thlinket the members of the family who belong to other totems are invited to a feast. The body is put on a funeral pile before the relations, and burned. The guests accompany the ceremony with dismal cries. They sometimes burn their hair in the fire, or cut it off, and smear themselves with ashes. Among the Kygáni they cut themselves with knives and stones. The guests who are of the same totem as the wife then enter the house, while the near relatives come in, disfigured and leaning on long staves, and weep or sing in the middle of the floor. These ceremonies last four days, with short intervals for eating. Several slaves were formerly killed, the number varying with the wealth of the dead man. After four days the relations wash and paint their faces. Presents are made to the guests who have assisted, and food is distributed, which concludes the ceremony.

The next heir is the younger brother or sister's son. The ashes of the dead are placed in curiously painted boxes near the house.

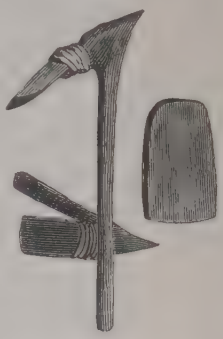
The talent for carving in wood and bone possessed by the Thlinkets has long been a matter of remark. The accompanying illustration shows the general style of their carving. Their canoes are of less beauty than those of the more southern tribes, and the natives resident at Sitka, from the demoralizing effect of liquor

obtained at the adjacent trading-post, have much degenerated in this kind of work, but those more remote are still proficient in it.



Thlinket comb.

Before the introduction of iron by the Russians they were unacquainted with it, but used tools of stone or native copper. The annexed cut shows an ancient stone axe and skindresser, as formerly in use. At present many of them have some knowledge of working in iron. They purchase large files of the traders, of which they make peculiar bayonet-shaped knives. Those of native copper were of similar form, and both are frequently ornamented with totemic emblems. They are fond of silver and other white metals, which they prefer to brass or gold. They wear ear-rings and other ornaments of their own manufacture from silver half-dollars.



Stone axe and skindresser.

Bows and arrows seem to have disappeared, as they have been well supplied for years, by the traders, with iron spears or pikes and flint-lock guns.

Their festivals consist of dancing, singing, and feasting. The dances and songs are all emblematic, and the Thlinket prides himself above all on his proficiency in these accomplishments. The songs are remarkable for their rhythm. The principal authors who have described the Thlinkets are Veniamínoff and Wrangell, from whose works the greater part of these facts have been extracted. Festivals are given on erecting a new house, on the naming of children, deaths, marriages, etc.

Among their more important festivals are those called "*elevat-*

ing the dead," on which occasions they erect monuments in their honor. Such festivals are rare, on account of their costliness. Guests are invited even from distant settlements, and not unfrequently the host gives away not only his own property, but that which his wife brought him, and lives afterwards in abject poverty, retaining only the honor and glory of the celebration as a reward for the respect paid to his ancestors' memory.

Frequently a whole family, and even a whole settlement, take part in such festivals. Invitations are sent, long beforehand, to the most remote villages. Women and children frequently attend.

The house or lodge where the festivities are to take place is thoroughly cleansed, or even a new one is erected, with the inner and outer walls covered with emblematic paintings, particularly of the totems.

Dancing and singing commence with the arrival of guests, the more distinguished among whom are selected to take part in the opening ceremonies. These last commence with the relatives only, on the first morning after the guests have arrived and later a solemn meal. This is succeeded by dances and songs, in which the women do not participate, which are all emblematic or symbolic ; they are kept up without intermission, except for eating, as many days as the host can afford.

On the evening before the close of the festivities the host, generally a chief, retires with a slave to a small hut or room, where he puts on a singular costume, frequently an heirloom, handed down with the greatest veneration from many generations, and only used on such occasions. It is different in different families, but always represents the totem of the family, either in part or complete. It is also ornamented with human teeth, ribands, ermine skins, and other things valued by the owner. The slave who dresses his master in this manner is selected a long time in advance, and is always set free after it is over.

Dressed in this manner, on leaving his place of concealment, surrounded by slaves, he is greeted by a member of the family with a cry resembling that of the animal denoted by the totem. Upon the nature of the cry, which is made in a stated manner, depend the lives of several slaves. If unfavorable they are immediately executed, and the hosts begin to sing their family songs, relating the deeds of their ancestors, and the origin of the family.

The host seats himself, and the presents are brought forth and distributed. They are given in proportion to the rank and wealth of the receiver. Slaves are also given away. This, if any other families participate in the festival, is followed on the next day by a similar proceeding in another house, till the number of the hosts is exhausted. The latter are entitled on these occasions to assume the name of some deceased paternal ancestor.

Another class of festival, also very costly, and considered among their more prominent ones, deserves mention. It is given in honor of children. A new house is always built for its express celebration, in which both the guests and members of the tribe receive presents, while at other times only guests receive them. After the dancing and singing are over, slaves, to the number of the children for whom the celebration is given, receive their liberty. The children are then brought forward, according to their age, and the holes before mentioned are made in their ears with an awl. Meanwhile the bystanders utter a hissing sound, probably to drown any outcry on the part of the children, after which food and presents are distributed, and the festival comes to an end.

The Thlinket slaves are either captured in war, bought from other tribes who may themselves have captured them, or the children of female slaves. The wars between the tribes, being now of rare occurrence, the supply of slaves is kept up by barter with the more southern tribes, and hence many of the slaves are Flatheads from Oregon. The slaves of the Thlinkets, as formerly the case with other slaves nearer home, have no rights that the master is bound to respect. A slave cannot acquire property, nor marry, except by consent of his master, which is rarely given. Manumitted slaves have the rights of common Thlinkets. When in a state of slavery they are seldom killed, except at festivals as above mentioned, as they are valuable property and hard to replace. If the selected victim makes his escape, and hides himself, he may, after the festival is over, return to his master's house without fear of punishment. Opportunities are often furnished for favorite slaves to escape in this way. As a rule, only old, sickly, or obstinate slaves are sacrificed. After their death the bodies are committed to the tender mercies of the sea, so that they do not obtain rest, even in their graves.

The Thlinkets, like all American Indians, do not believe in a Supreme Being, for good or evil. Their feeble polytheism presents no features worthy of the name of religious belief. Yehl, or Yayhl, is the maker of woods and waters. He put the sun, moon, and stars in their places. He is generally well behaved, but on occasions brings misfortune upon men, generally for very trivial reasons. Wrangell's account of him is mingled with superstitions derived from the Russian priests, and, consciously or unconsciously, applied to the aboriginal myth. Yehl lives in the east, near the head-waters of the Nasse River, whence the Thlinkets say they originally came. He makes himself known in the east-wind, "*Ssánakheth*," and his abode is "*Nássshak-yehl*."

There was a time when men groped in the dark in search of the world. At that time a Thlinket lived who had a wife and sister. He loved the former so much that he did not permit her to work. She sat the whole day doing nothing. Eight little red birds, called *Kun* by the Thlinkets, were always around her. One day she spoke to a stranger. The little birds flew and told the jealous husband. So when he went into the woods to build a canoe he shut her up in a box. He killed all his sister's children because they looked at his wife. Weeping, the mother went to the sea-shore. A whale saw her, and asked the cause of her grief, and when informed told her to swallow a small stone from the beach and drink some sea-water. In eight months she had a son, whom she hid from her brother. This son was really Yehl. As he grew he became a great expert in shooting with a bow and arrow. It is said the mother made herself a mantle out of the skins of humming-birds which he had brought down.

He killed birds of large size, and, dressing himself in their skins, flew about to different places, having many adventures.

The only one worth relating is the most glorious of his deeds, — that of putting the light in its place. At that time the sun, moon, and stars were kept by a rich chief in separate boxes, which he allowed no one to touch. Yehl heard of it, and desired to have them. This chief had an only daughter, whom he loved and spoiled to such a degree, that he examined everything she ate and drank before he would allow her to partake. Yehl saw that only a grandson of the old chief could obtain the light ; and, in the form of a blade of grass, he was swallowed, and made his

next appearance in that character, and was soon beloved even more than his mother. Once Yehl commenced weeping, and nothing would appease him but the boxes in which the luminaries were kept. After a long siege of crying the grandfather gave him one of the boxes to pacify him, and he went out of the house playing with it. Seeing he was not observed, he opened the box, and, lo! there were stars in the sky. Great were the lamentations of the old man over the loss of his treasure, but he loved his grandson too well to scold him, and actually permitted himself to be cheated out of the moon in the same way. But with the box containing the sun he was more careful, and only after refusing food and making himself sick did Yehl succeed in imposing on the affectionate old man. That was finally given to him, with the strict injunction not to open it. But, turning himself into a raven, he flew away with it, and, on opening the box, light shone on the earth as it does now. But the people, astonished by the unwonted glare, ran off into the mountains, woods, and even into the water, becoming animals or fish.

Yehl was also said to have brought fire from an island in the ocean. Fresh water was also wanting. *Khanúkh*, the wolf, watched incessantly over the only well in the world. Khanúkh was older and more powerful than Yehl, and is the malign spirit of the Thlinkets. Yehl finally succeeded in obtaining the water by a stratagem. The many stories told of him probably owe their origin quite as often to the imagination of the individual, whose fancies crystallize around Yehl as a centre, as to any definite tradition. After arranging everything for the comfort of the Thlinkets, Yehl disappeared in his abode, where neither man nor spirit can penetrate.

There are immense numbers of minor spirits called *Yekh*, who are invoked by the shamáns. Each shamán has his own familiar spirits, who do his bidding, and others on whom he may call in certain emergencies. These spirits are divided into three classes: *Khíyekh* ("the upper ones"), *Tákhi-yekh* ("land spirits"), and *Tékhi-yekh* ("sea spirits"). The first are the spirits of the brave killed in war, dwelling in the north. Hence a great display of northern lights is looked upon as an omen of war. The second and third are the spirits of those who died in the common way, and who dwell in *Takhan-khóu*. The ease with which these last

reach their appointed place are apparently dependent on the conduct of their relations in mourning for them.

Too many tears mire the road, but the sufficient quantity just lays the dust, and makes the road hard and even.

The *Tákhi-yekh* appear to the shamáns in the form of land animals, but *Tékhi-yekh* in the form of marine animals. With regard to the latter there is some doubt, some of the Thlinkets saying that they are the spirits of marine animals themselves, and not human spirits. Beside this, every one has his *Yekh*, who is always with him, except in cases when the man becomes exceedingly bad, when the Yekh leaves him. These spirits are said, with questionable truth I presume, to be fond of cleanliness, and only permit themselves to be conjured by the sound of a drum or rattle. The last is usually made in the shape of a bird, — hollow, and filled with small stones. These are used at all festivities, and whenever the spirits are wanted.

The Thlinkets believe in immortality and transmigration, but not in the transmigration of human souls into animals, only from one human body to another.

It is not uncommon to hear a poor Thlinket say, when speaking of a wealthy or prosperous family, "If I should die, I should like to be born into that house," or even, "Akh, were I dead, I might perhaps return to the world in a happier condition!"

Those whose bodies are burned, are supposed to be warm in the other world, others to suffer from cold. Those in whose honor slaves were sacrificed, need not work there.

Their traditions tell of a general deluge, in which a few were saved on a raft. The waters receding, the raft broke in two; on one side were the ancestors of the Thlinkets, on the other those of all other nations of the world. Hence the differences of language and customs. In the beginning of this flood a brother and sister were separated. The brother's name was *Chethl*; the sister's was *Ah-gish-án-akhou* ("woman under the world"). As they were torn asunder, Chethl' said to his sister, "You will see me no more, but as long as I live you shall hear my voice." Then he put on the skin of an immense bird, and disappeared in the southwest. The sister ascended Mount Edgecumbe, near Sitka, which opened and swallowed her up, of which the crater remains in evidence.

Descending beneath the earth, she devoted herself to sustaining the world (which is buckler-shaped, according to the Thlinkets) upon a pillar, above the waters which had so lately surged over it. Spirits hating mankind endeavor to drive her away, to overturn the pillar, to destroy the earth and its inhabitants. The pillar sometimes is made to tremble, producing earthquakes, during these battles; but *Ah-gish-án-akhou* is strong and faithful, and the earth is safe. Chethl', in the form of the bird *Kunna-kát-eth*, frequents the crater of Edgecumbe, feeding on whales, which he carries there in his claws. Rising from his eyrie with the coming storm, true to his promise, thunder is the rustling of his wings, while lightning flashes from his eyes.

Our information goes no further. Wrangell says nothing of the totems of the whale and the eagle, of which last Chethl' is probably the originator, and only incidentally mentions the wolf, Khanúkh. He says the Thlinket code of morals is, "As Yehl lived and acted, so should we live and do"; but this is vague, unsatisfactory, and probably erroneous. It is well worthy of notice that among these myths there is nothing pointing toward a Supreme Being, any system of reward and punishment, or any law of moral responsibility; nor, contrary to the popular notion, have I found among any of the savage tribes any such beliefs whatever, except where clearly traceable to the teachings of the whites.

Sorcery, "medicine," or shamánism appears to be inherent in the minds of all uncivilized nations, and an inevitable concomitant of a low stage of mental development. Its essential characters are the same in the Indian, the Eskimo, the native African, the Koriáks and Tungúses on the frozen steppes of Siberia, and the Fijians on the green islands of the tropical ocean. In its details it differs, taking its shades of development generally from the psychological peculiarities of each nation, consequent on its surroundings and mode of life.

Some authors, losing sight of essential points of agreement in the differences of detail, would restrict it to the northern nations only; or perhaps would apply only to the closely allied forms of superstition current among those nations, the term "shamánism," which is derived from a Yakút word meaning "holy," but has been adopted into the English language by lexicographers * from

* See Webster's Unabridged, &c., where it is incorrectly accented.

the Russian, as we have no word in our language to express it. It is always closely interwoven with the aboriginal polytheistic myths, and is in fact a natural offshoot from them.

The words and actions of the shamán, or sorcerer, are considered infallible by the Thlinkets, and believed implicitly by them.

A shamán must have the faculty, not only of calling "spirits from the vasty deep," but also the power to make them come when he calls for them, or at all events to appear to come. The office is often hereditary, a grandson or son inheriting the paraphernalia, drums, rattles, masks, etc. of the shamán; but if he does not possess certain mental or psychological peculiarities beside, all this availeth nothing.

The aspirant for shamánism goes for some time into the forest, or upon a mountain, in solitude, — situations calculated to call forth a sort of mental fervor, and to excite the imagination to the highest pitch. Here he remains, subsisting exclusively on the root of a wild plant (*Panax horridum*), and avoiding the company and habitations of men. The length of time depends on his susceptibility to mental excitement. In their own relations of the event, they say that one of the foremost of the spirits sends a river-otter to them, in the tongue of which lies the whole secret, power, and force required in the profession of shamánism. When the otter meets the shamán, both stop. The man kills the animal, crying aloud four times as he does so. The otter falls on its back, stretching out its tongue, which the shamán cuts out and preserves in a small cover, made for it with the greatest care, hiding it with the utmost precaution, as an uninitiated person finding it would immediately lose his senses. The skin of the otter is taken off, and preserved by the sháman, as a sign of his profession. The flesh is carefully buried, and, previous to the Russian occupation of Sitka, no Thlinket dared to kill an otter. At present, from love of gain, and experience having shown no evil results, that superstition has become nearly extinct.

If solitude and a low diet do not bring the desired boon, the aspirant repairs to the grave of some shamán of repute, remains overnight near the body, taking a tooth or a finger from the corpse in his mouth, the more readily to compel the attendance of the expected spirits, and the required otter. Haggard and half

insane, the neophyte returns to his kindred, where his new powers are immediately put to the test.

The honor and respect with which a shamán is regarded depend on the number of spirits under his control, who, properly employed, contribute largely to his wealth. For every one of them he has a name and certain songs. Sometimes the spirits of his ancestors come to his assistance, and increase his power, so that it is believed he can throw his spirits into other people who do not believe in his art. Those unfortunate wretches to whom this happens, suffer from horrible fits and paroxysms.

When the shamán is sick, his relations fast to promote his recovery. His command is law. The shamáns long since forbade the eating of whale's flesh and blubber, one of the greatest delicacies among the neighboring tribes; and to this day it is regarded with abhorrence by the Thlinkets.

The shamán has a large amount of paraphernalia. This includes wooden masks, one for each spirit, carved and carefully painted. These are distinct from the masks used by all the Thlinkets in their dances and festivals.

The hair of the shamán must never be cut. After his death, as was mentioned previously, his body is not burned, but deposited in a wooden box on four high posts. For the first night he remains lying in the corner where he died; but on the following day he is removed to the opposite corner, and this is continued until the body has visited each of the four corners of the house. All the inmates of the house fast meanwhile. On the fifth day the body, dressed in the garb of his profession, is bound to a board. Two ivory or bone wands, which the shamán used in his performances, are placed, the one in the cartilage of the nose, and the other in the hair, which is tied together. The head is covered with a piece of basket-work, and the body is carried to its final resting-place, always on the shore. Every time a Thlinket paddles by the remains he throws a small offering, as a little tobacco, in the water, that he may by this means find favor in the eyes of the dead man.

One example of the manner in which shamánism is practised will suffice. On the day appointed for the exhibition of his power, his relations, who act the part of a chorus of singers, are obliged to fast. Nay, more than that; they are obliged to use a

feather as an emetic, and free themselves entirely from such gross material substances as food.

The performance commences at sunset and lasts till sunrise. All who wish to participate assemble in the lodge or hut of the shamán, where they join in a song, to which time is beaten on a drum. Dressed in his paraphernalia, with a mask over his face, the shamán rushes round and round the fire, which is burning in the centre of the lodge; he keeps his eyes directed toward the opening in the roof, and keeps time to the drum with violent motions of his limbs and body. These movements gradually become more convulsive; his eyes roll till the whites alone are visible. Suddenly he stops, looks intently at the drum, and utters loud cries. The singing ceases, and all eyes are directed toward him, and all ears strained to catch the utterances which are supposed to be inspired. These ceremonies comprise the whole art of shamánism among the Thlinkets. The spirits of the different classes appear to the shamán in different forms. By changing the masks he places himself *en rapport* with the spirit to which each mask is dedicated. It is believed that this spirit inspires for the moment all the utterances of the shamán, who is for the moment unconscious. After the ceremonies are over, first tobacco and then food are distributed to those present, and all is concluded.

The Sítka-kwan have now a large infusion of Russian blood. Many of the half-breeds are fine-looking, and some have married Russians. Diseases are very prevalent, but less so than before the establishment of the Russian hospital. Licentiousness is universal among them, and much of their present degradation is due to the sale of liquor to them by the Russians and Hudson Bay traders. Smugglers, many of them Americans, have carried on a successful but dangerous traffic with them for years. They are, without doubt, the most dangerous of the tribes in the territory. Many of them are professed Christians of the Greek faith. Some have been repeatedly baptized for the sake of the presents which accompany that ceremony. It need hardly be said that their Christianity is totally unworthy of the name, and only served the purpose of promoting the so-called missionaries to higher positions in the church they disgraced. It is more than probable that the only missionary, beside Veniamínoff, who has

really done much to elevate the Indian tribes on the west coast, is the Rev. Mr. Duncan, of Meta-kátla.

The Yákutats. — This tribe includes the natives who occupy the coast from Mount Fairweather to Mount St. Elias. They are of the Thlinket stock, but do not wear the *kalúshka* or lip-ornament, are said not to adopt the totemic system, and eat the blubber and flesh of the whale, which the last-mentioned tribes reject. They live in great part by fishing, and are few in number. This concludes the list of the Thlinket tribes, in the territory of Alaska.

The Tínneh Stock. — This great family includes a large number of North American tribes, extending, from near the mouth of the Mackenzie, south to the borders of Mexico. The Apaches and Comanches belong to it, and the family seem to intersect the continent of North America in a north and south direction, principally along the flanks of the Rocky Mountains.

The tribes of this stock in the north extend westward nearly to the delta of the Yukon, and reach the coast at Cook's Inlet and the mouth of the Copper River. Eastward they extend quite or nearly to the mountains which divide the watershed of Hudson Bay from that of the Mackenzie and Athabasca. They are the *Thnaina* or *Kenaizer* of Holmberg. They have been called *Chippewýans* (pointed coats), from the shape of their párkies, and *Athabáscans*, from the district some inhabit; but their own national designation is *Tínneh*, meaning "people" in a collective sense. Though some tribes evidently of this stock have other designations, I propose, with Messrs. Ross and Gibbs, to adopt it as preferable to either of the above-mentioned names.

The northern Tínneh may be divided into three natural groups. These are, first, the *Eastern Tínneh*, who form their tribal name by the addition of "*tenâ*," an evident modification of the same word. Next come the *Kutchín tribes*, who principally occupy the Yukon and its tributaries above Nuklukahyét. They form their tribal name by the addition of the word *Kutchín*, which has the same meaning as Tínneh. Lastly, the *Western Tínneh*, who occupy the region west of the Yukon and the banks of that river below Nuklukahyét. They form their tribal designation by the addition of the word "*tána*," another modification of Tínneh. They are bounded everywhere on the coast by the Innuit territory. These three divisions will be considered collectively.

The Nehâunees. — Beginning, for the sake of unity, somewhat beyond our boundaries, the region which includes the Lewis, or Táhco, and Pelly rivers, with the valley of the Chilkáht River, is occupied by tribes known to the Hudson Bay voyageurs as Nehâunees. They are as yet quite a primitive people and some of the tribes are described as deeply sunk in dirt, ignorance, and barbarism. They can be warlike, but are generally considered as cowardly and treacherous. Those who inhabit the valley of the Chilkáht are said to call themselves *Chilkáht-tenâ*. They are a bold and enterprising people, great traders, and of a high degree of intelligence. They carry Russian goods over the portage, indicated in the map (as laid down by one of them), to the tribes living on the Yukon. They are said to have had a hand in the burning of Fort Selkirk.

Those on the Pelly and Macmillan rivers call themselves *Abbato-tenâ*, and are a much lower grade of Indians. Those on the Upper Yukon are little known, few in number, and said to be very low in the scale of intelligence.

Some of them near Liard's River call themselves *Dahó-tenâ*, or *Achcto-tenâ*, and others are called *Sicânees* by the voyageurs. Those near Frances Lake are also known as *Mauvais Monde* or *Slâvè* Indians. About Fort Selkirk they have been called *Gens des Foux*. They live on the moose and deer, beside fishing. They obtain many furs, and dress moose and deer skins for barter with the English. They wear the national pointed coat, like the Koyúkuns, have the nose pierced, and practise embroidery with porcupine quills. They are migratory in their habits, following the moose and deer, building no permanent dwellings, and living in skin tents throughout the year. In most respects their customs agree with those of the tribes below on the river.

The Tutchóne Kutchín. — These, also called Nehâunee by the traders, occupy the country on both sides of the Yukon about Fort Selkirk. They are sometimes called *Gens des Foux*, Caribou, or Mountain Indians. Their own name, translated, means "Crow Indians."

The Âh-tenâ. — South and west of the last-named, on the upper part of the Atna or Copper River, are a little-known tribe of the above name. They have been called *Âtnacr* and *Kolshína* by the Russians, and *Yellow Knife*, or Nehâunee, by the English.

The Ugaléntsi. — A small tribe, called by this name among the Russian traders, are said to hold their winter festivals on Káyak Island, and to fish during the summer on the banks of the Copper River, near the mouth. They have been considered as an offshoot of the Thlinkets by some authors; but, judging from a vocabulary in the possession of Mr. Gibbs, they are more properly grouped with the Tínneh.

The Kenai-tená. — These Indians inhabit the country near Cook's Inlet, and both shores of the Inlet as far south as Chugáchik Bay. They are the "*true Thnaina*" of Holmberg, and are called by the Yukon tribes *Tehanin-Kutchín.* Their customs are similar to those of the other Indian tribes of the vicinity, as far as we know. Lisiánsky says that they use birch canoes, and bury their dead in wooden boxes, piling stones above the dead. They express their lamentation by smearing their faces with black paint, singeing their hair, and lacerating their bodies with knives. They are more intelligent than the neighboring Innuit tribes, and live by hunting and fishing. They kill large numbers of the mountain goat, and clothe themselves partly with the skins. Those near the coast use bidárkas, which they purchase from the Innuit. Their language is extremely guttural when compared with that of the Innuit.

The Han-Kutchín. — These are found on the Yukon, next below the Crows, and bear the name of *Gens des Bois* among the English. They are few in number. They are sometimes called Kolshina by the Russian traders, who apply that term to all Indians they are not familiar with.

The Tukkúth-Kutchín. — These occupy the country south of the head-waters of the Porcupine or Rat River.

The Vuntá-Kutchín. — These inhabit the territory north of the head-waters of the Porcupine, somewhat below Lapierre's House, which is in the territory of the last-named. These are sometimes called *Loúcheux* or Quarrellers, and their name signifies "Rat people."

The Natché-Kutchín. — These extend on the north bank to the mouth of the Porcupine. Like all the Tínneh tribes hitherto mentioned, they are migratory, and their customs much resemble those of the following tribes. Their name means "strong people"; the English call them *Gens de Large.* The first syllable is

TENAN-KUTCHIN AND KUTCHA-KUTCHIN.

sometimes spelled *Natsit*. They are also called Loúcheux. They trade with the Innuit of the northern coast, though the barter is often interrupted by hostilities. They are noted for the babíche which they manufacture. They are migratory, few in number, and live by deer-hunting.

The Kutchá-Kutchín. — This tribe of Loúcheux are found in the country near the junction of the Porcupine and the Yukon. Their habits are fully described in the first part of this volume. Their name means "lowland people." They have mostly assumed the Hudson Bay dress, as seen in the sketch opposite, while the next tribe still retains the pointed coats.

The Tenán-Kutchín. — This, the last of the list of Kutchín tribes, occupies the country drained by the Tananáh River. They have been previously described. In all the tribes hitherto mentioned the women are drudges, doing almost all the hard work, and, naturally good-looking, are soon made extremely ugly by their mode of life. This is not the case among the Western Tínneh tribes, where the women do only a fair share of the work, and have a powerful voice in most affairs. There were formerly a few bands of Indians between the mouths of the Porcupine and Tananáh, on the Yukon, but they have been swept away by scarlet fever. They were the *Tennúth-Kutchín* or Birch Indians (*Gens de Boulcaux*) and the *Tatsáh-Kutchín*.

The Unakho-tána. — These Indians live on the Yukon below Nuklukahyét to the Koyúkuk River. They have settled villages, and build houses, though they leave them during the hunting season. They have been fully described elsewhere. They also call themselves, as well as most of the other tribes who live on the Yukon, *Yukónikho-tána*, or "men of the Yukon." The other name means "far-off people." They are the *Junnachotana* of Holmberg.

The Koyúkukho-tána. — These are sedentary Indians living on the Koyúkuk River, and described as Koyúkuns in another part of this volume. They are the *Junnakachotana* of Holmberg, and perhaps the *Kctlitk-Kutchín* of the Hudson Bay voyageurs, who know them only by report. The name means "people of the Koyúkuk River."

The Káiyuh-kho-tána. — These are very fully described elsewhere, and occupy both banks of the Lower Yukon, nearly to the Mission,

the valley of the Upper Kuskoqúim, and the country between the two rivers. They are known to the Russians as *Ingaliks*, a name of which I have not been able to trace the origin, but which is, perhaps, their Innuit appellation. It is the largest tribe in the territory, and while I have some doubts about a tribe on the headwaters of the Kuskoqúim, called "Kolshina" by the Russian traders, yet there do not appear to be any divisions in all this extent of country of tribal value. They understand one another perfectly, but cannot converse with the Kutchín tribes, although the dialects are very similar, as is evident from the vocabularies. They comprise the *Inkiliken*, *Ulukagmuts*, *Takajaksen*, *Jugelnuten*, *Inkalichljuaten*, *Thljegonchotána*, &c., of Holmberg. The names which he uses are most of them of only local value, and not tribal names. The "*Innoka*," "*Thljegon*," and "*Tatschegno*" rivers, of which Zagóskin wrote, are, in name at least, emanations from his own imagination. He never visited them, and no white man has ever been where they are laid down on the map. In this respect they resemble the *Colvile*, *Núnatok*, *Kówak*, and other rivers, of which the mouths alone have been seen by the whites, yet which are spread over nine degrees of latitude, and eight of longitude by many modern geographers ; probably for the purpose of filling up the blank spaces on the map, and thus disguising our ignorance of them.

This completes the list of the native Innuit and Indian tribes of Alaska and the territory immediately adjacent.

CHAPTER IV.

Climate and Agricultural Resources.

ALASKA may be divided agriculturally into three districts; each differing from the others in its climate, vegetation, and physical characteristics. The first and most northern district, which I have termed the Yukon Territory, is bounded on the south by the Alaskan Mountains, on the east by the British boundary line, and on the north and west by the Arctic Ocean and Bering Sea.

The second or middle district, which may be called the Aleutian District, includes that part of the peninsula of Aliáska, and all the islands west of the one hundred and fifty-fifth degree of longitude.

The third or southernmost, which will be designated as the Sitkan District, includes all our possessions on the mainland and islands south and east of the peninsula of Aliáska.

The Yukon Territory. — The character of the country in the vicinity of the Yukon River varies from low, rolling, and somewhat rocky hills, usually easy of ascent, to broad and rather marshy plains, extending for miles on either side of the river, especially near the mouth. There are, of course, no roads, except an occasional trail, hardly noticeable except by a voyageur. The Yukon and its tributaries form the great highways of the country.

The rocks vary, the greater proportion being conglomerate, sienite, quartzite, and sandstone. Trachyte and lava abound in particular districts. The superincumbent soil also differs, in some localities being sandy, and in others clayey. In the latter case it is frequently covered with growth of sphagnum, which causes a deterioration of the soil below it. Over a large extent of country it is a rich alluvial, composed of very fine sand, mud, and vegetable matter, brought down by the river, and forming depos-

its of indefinite depth; and in some such localities fresh-water marl is found in abundance.

The soil is usually frozen at a depth of three or four feet in ordinary situations. In colder ones it remains icy to within eighteen inches of the surface. This layer of frozen soil is six or eight feet thick; below that depth the soil is destitute of ice, except in very unusual situations.

This phenomenon appears to be directly traceable to want of drainage, combined with a non-conductive covering of moss, which prevents the scorching sun of the boreal midsummer from thawing and warming the soil.

In places where the soil is well drained, and is not covered with moss, as in the large alluvial deposits near the Yukon-mouth, I have noticed that the frozen layer is much farther below the surface, and in many places appears even to be entirely wanting.

I have no doubt, that, in favorable situations, by draining and deep ploughing, the ice could, in the course of time, be wholly removed from the soil.*

A singular phenomenon on the shores of Escholtz Bay, Kotzebue Sound, was first observed and described in the voyage of the Rurik by Kotzebue and Chamisso, and afterward in the Appendix to the Voyage of the Herald by Buckland and Forbes.

It consists of bluffs or banks (30 to 60 feet high) of apparently solid ice, fronting the water, which washes on a small beach formed by detritus, at the foot of the bank. These continuous banks of ice, strange to say, are covered with a layer of soil and vegetable matter, where, to use the words of the renowned botanist, Dr. Seemann, "herbs and shrubs are flourishing with a luxuriance only equalled in more favored climes."

Kotzebue's account is exaggerated and highly colored, as is

* Aiton (Treatise on Peat Moss, &c., see Ed. Ency., Vol. XVI. p. 738) has ascribed the cold and rainy climate of Scotland partly to the accumulations of sphagnum. "Thirty-two and a half ounces of dry moss soil will retain without fluidity eighteen ounces of water; whilst thirty-nine ounces of the richest garden mould will only retain eighteen and a half ounces. Moss is also more retentive of cold than any other soil. *Frost is often found* (in Scotland) *to continue in deep mosses until after the middle of summer.* Hence the effect of mossy accumulations in rendering the climate colder."

everything he has written ; but the facts were confirmed by Dr. Buckland and his companions, although Captain Beechey had previously reported * that Kotzebue had been deceived by snow, drifted against the face of the banks, and remaining while that in other localities had melted away.

Dr. Buckland and his party not only examined the face of these bluffs, but at various points on the top of the bank, more or less removed from the shore, and found in every instance ice, nearly pure or mixed with vegetable matter, at a short distance below the surface.† They report also that the water in the bay is becoming more shallow, by the fall of the detritus, as the ice melts away, and the formation is rapidly disappearing. As no explanation has been offered of this singular phenomenon, I venture to suggest that it may be due to essentially the same causes as the subterranean ice layer, which is found over a great part of the Yukon Territory.

It is quite possible to conceive of a locality depressed and so deprived of drainage that the annual moisture derived from rainfall and melting snow would collect between the impervious clayey soil and its sphagnous covering, congeal during the winter, and be prevented from melting, during the ensuing summer, by the non-conductive properties of that mossy covering, which would thus be gradually raised ; the process, annually repeated for an indefinite period, would form an ice layer which would well deserve the appellation of an "ice-cliff," when the encroachments of the sea should have worn away its barriers, and laid it open to the action of the elements.

The lesson that the agriculturist or political economist may learn from this curious formation is, that a healthy and luxuriant vegetation may exist in the immediate vicinity of permanent ice, bearing its blossoms and maturing its seeds as readily as in situations apparently much more favored. Hence we may infer that a large extent of territory long considered valueless may yet furnish to the trader, fisherman, or settler, if not an abundant harvest, at least an acceptable and not inconsiderable addition to his fare of fish, venison, and game.

* Narrative of the Voyage of the Blossom to the Pacific and Behring Strait. London, 1831.

† See Narrative of the Voyage of the Herald, also the Appendix. London, 1845–1851. Also Osteology of the Herald's Voyage, by Prof. E. Forbes.

The climate of the Yukon Territory in the interior (as is the case throughout Alaska) differs from that of the sea-coast, even in localities comparatively adjacent. That of the coast is tempered by the vast body of water contained in Bering Sea, and many southern currents bringing warmer water from the Pacific, making the winter climate of the coast much milder than that of the country, even thirty miles into the interior; this, too, without any high range of mountains acting as a bar to the progress of warm winds. The summers, on the other hand, from the quantity of rain and cloudy weather, are cooler and less pleasant than those of the interior. The months of May and June, however, and part of July, are delightful, — sunny, warm, and clear. To quote Seemann again, on the northern coast "the growth of plants is rapid in the extreme. The snow has hardly disappeared before a mass of herbage has sprung up, and the spots which a few days before presented nothing but a white sheet are teeming with an active vegetation, producing leaves, flowers, and fruit in rapid succession." Even during the long Arctic day the plants have their period of sleep, — short, though plainly marked, as in the tropics, and indicated by the same drooping of the leaves and other signs, which we observe in milder climates. The following table shows the mean temperature of the seasons: At St. Michael's, on the coast of Norton Sound, in lat. 63° 28′; at the Mission, on the Yukon River, one hundred and fifty miles from its mouth, in lat. 61° 47′; at Nuláto, four hundred and fifty miles farther up the river, in lat. 64° 40′ (approximate); and at Fort Yukon, twelve hundred miles from the mouth of the river, and about lat. 66° 34′.

Means for	St. Michael's.	Mission.	Nulato.	Fort Yukon.
Spring	+29° 3	+19°.62	+29° 3	+14°.22
Summer	+53 .0	+59 .32	+60 .0 ?	+59 .67
Autumn	+26 .3	+36 .05	+36 .0 ?	+17 .37
Winter	+8 .6	+0 .95	−14 .0	−23 .80
Year	+29°.3	+26°.48	+27°.8	+16°.92

The mean temperature of Unalaklík, on the east shore of Norton Sound, lat. 63° 42′ was, for the winter of 1866–67, +0°.33;

but for that of 1867–68 it was much higher, probably about +9°.0. The mean annual temperature of the Yukon Territory, as a whole, may be roughly estimated at about +25°.0. The greatest degree of cold ever known in the territory was seventy below zero, of Fahrenheit; but such cold as this is very rare, and has little effect on the vegetation, covered with six or eight feet of snow. Open water may be found on all the rivers in the coldest weather, and many springs are not frozen up throughout the year.

The real opportunity for agricultural enterprise in a country cannot be deduced from annual mean temperatures alone, but is dependent on the heat of the summer months and the duration of the summer.*

At Fort Yukon I have seen the thermometer at noon, not in the direct rays of the sun, standing at 112°, and I was informed, by the commander of the post, that several spirit thermometers, graduated up to 120°.0, had burst under the scorching sun of the Arctic midsummer; which can only be thoroughly appreciated by one who has endured it. In midsummer on the Upper Yukon the only relief from the intense heat, under which the vegetation attains an almost tropical luxuriance, is the brief space during which the sun hovers over the northern horizon, and the voyageur in his canoe blesses the transient coolness of the midnight air.

The annual rainfall cannot be accurately estimated from want of data. At Nuláto the fall of snow from November to the end of April will average eight feet, but often reaches twelve. It is much less on the seaboard. Partly on this account, and also because it is driven seaward by the wind, there is usually in spring very little snow on the coasts near Norton Sound. In the interior there is less wind, and the snow lies as it falls among the trees. Toward spring the ravines, gullies, and brushwood are well filled or covered up, and transportation with dogs and sleds is easy and pleasant. The warm sun at noon melts the surface of the snow, which soon freezes, forming a hard crust, rendering snowshoes almost unnecessary.

The rainfall, as has been previously remarked, is much greater in summer on the coast than in the interior. The months of May,

* More extended data in regard to the meteorology may be found in Appendix.

June, and part of July, bring sunny, delightful weather; but the remainder of the season, four days in a week at least, will be rainy at St. Michael's. October brings a change. The winds, usually from the southwest from July to the latter part of September, in October are mostly from the north, and, though cold, bring fine weather. They are interrupted occasionally by gales, the most violent of the season, from the southwest; piling the driftwood upon the shores, where it lies until the succeeding fall, unless carried off by the natives for fuel.

The valley of the Lower Yukon is somewhat foggy in the latter part of the summer; but as we ascend the river the climate improves, and the short summer at Fort Yukon is dry, hot, and pleasant, only varied by an occasional shower.

The climatic law which governs the distribution of trees also seems to limit the wanderings of the aborigines. The Eskimo extend all along the coast and up the principal rivers with the tundra. The Indians populate the interior, but seldom pass the boundary of the woods. Neither perform any agricultural labor whatever, unless we so designate the work of picking wild berries, which form their only vegetable food, excepting the half-digested food of the reindeer; the roots of *Hedysarum Mackenzii*, the "liquorice root" of the trappers; *Polygonum viviparum;* a species of *Archangelica*, or wild parsnip; and the leaf-stalks of a *Rumex*, or wild rhubarb.

The few Russian settlements in the Yukon territory, pursuant with the charter of the Russian American Company enjoining them to "promote agriculture," were formerly provided with small gardens; but little interest being taken by the officers of the Company in such matters, especially during the last governorship, none of them, during the time of my residence, were cultivated, with the exception of those at St. Michael's and the Mission. These were due to the procuring of seed, through private hands, by the Uprovalísha Sergei Stepanoff and Father Lárriown, the missionary, and not to any assistance from the Company. The employés of the Company had too little energy and knowledge of agriculture to attempt anything of the kind.

The first requisite for habitation, or even exploration, in any country, is timber. With it almost all parts of the Yukon Territory are well supplied. The treeless coasts even of the

Arctic Ocean can hardly be said to be an exception, as they are bountifully supplied with driftwood from the immense supplies brought down by the Yukon, Kuskoqúim, and other rivers, and distributed by the waves and ocean currents.

The largest and most valuable tree found in this district is the white spruce (*Abies alba*). This beautiful conifer is found over the whole country a short distance inland, but largest and most vigorous in the vicinity of running water. It attains not unfrequently the height of fifty to one hundred feet, with a diameter of over three feet near the butt; but the most common size is thirty or forty feet and twelve to eighteen inches at the butt. The wood is white, close, and straight-grained, easily worked, light, and yet very tough; much more so than the wood of the Oregon pine (*Abies Douglasii*). For spars it has no superior, but is usually too slender for large masts. It is quite durable. Many houses twenty years old, built of this timber, contained a majority of sound logs; but when used green, without proper seasoning, it will not last over fifteen years. These trees decrease in size, and grow more sparingly near Fort Yukon, but are still large enough for most purposes. The northern limit of this tree, according to Seemann, whose observations were confined to the coast, is 66° 44′; but it is, doubtless, found to the north of that latitude, in the interior, on the banks of some of the northern tributaries of the Yukon. It is abundant at Fort Yukon in lat. 66° 34′ (approximate). The unexplored waters of the Tananáh River bring down the largest logs in the spring freshets. The number of these discharged annually at the Yukon-mouth is truly incalculable. The freshet does not last more than three weeks, yet sufficient wood is brought down to supply the shores of the Arctic coast, Bering Sea, and the numerous islands.

Logs of all sizes are cast up in winrows by the October southwesters.

The tree of next importance in the economy of the inhabitants is the birch (*Betula glandulosa*). This tree rarely grows over eighteen inches in diameter and forty feet high. On one occasion, however, I saw a water-worn log about fifteen feet long, quite decorticated, lying on the river-bank near Nuklukahyét on the Upper Yukon; this log was twenty-four inches in diameter at one end and twenty-eight at the other. This is the only hard-

wood tree in the Yukon territory, and everything needing a hard and tough wood is constructed of birch. The black birch is also found there, but does not grow so large. Unfortunately for the rising generation, there are no schoolmasters to make use of its pliable twigs.

Several species of poplar (*Populus balsamifera* and *P. tremuloides*) abound, the former along the water-side, and the latter on drier uplands. The first-mentioned species grows to a very large size, frequently two or three feet in diameter and forty to sixty feet high. The timber, however, is of little value, but the extreme softness of the wood is often taken advantage of by the natives with their rude iron or stone axes, to make small boards and other articles for use in their lodges. They also rub up with charcoal the down from the seed-vessels, for tinder.

Willows and alders are the most abundant of trees. All sizes of the former may be found, from the slender variety on the Lower Yukon, which grows seventy or eighty feet high, while only six inches in diameter at the butt, and with a mere wisp of straggling branches at the extreme tip, to the dwarf willows of the Arctic coast, crawling under the moss with a stem no bigger than a lead-pencil, and throwing up shoots only a few inches high. "About Norton Sound, willows (*Salix speciosa*) are abundant. The alder (*Alnus viridis*) extends as far as Kotzebue, where, in company with willows, it forms a low brushwood. With the Arctic Circle the alder disappears. Willows (*S. speciosa*, *Richardsonii*, and *villosa*) extend their range farther, but are only able for a short distance to keep their ground; at Cape Lisburne (lat. 68° 52′) they are, in the most favorable localities, never higher than two feet, while their crooked growth and numerous abortive leaf-buds indicate their struggle for existence." (Seemann.) The above remarks must be understood as applying especially to the coast. A willow measured by the botanists of the Herald was found to be but twenty feet high and five inches in diameter; yet the annual rings showed that the tree had reached the age of eighty years. The Arctic coast is reported by Dr. Seemann to be a vast moorland, whose level is only interrupted by a few promontories and isolated mountains. Willows are almost invariably rotten at the heart, and are only good for fuel.

The inner bark is much used for making twine for nets and seines by the Indian women, and the Eskimo of Bering Strait use willow and alder bark to tan or color their dressed deer-skins. It produces a beautiful red brown, somewhat like Russia leather.

The other species rising to the rank of trees in this district are the larch (*Larix davurica ?*), which is found of small size on rolling prairies, another birch (*Betula nana*), and several alders (*A. viridis, incana*, and *rubra*). A species of pine indigenous in Kamchatka (*Pinus cembra*) has been erroneously referred to as from Kotzebue Sound. *Pinus contorta* is found near Fort Selkirk at the junction of the Lewis or Táhco River with the Pelly River. It does not ascend the Yukon any farther northward. The Hudson Bay men at Fort Yukon call the white spruce "pine."

The treeless coasts of the territory, as well as the lowlands of the Yukon, are covered in spring with a most luxuriant growth of grass and flowers. Among the more valuable of these grasses (of which a nearly complete list may be found in the Appendix) is the well-known Kentucky blue-grass (*Poa pratensis*), which grows luxuriantly as far north as Kotzebue Sound, and perhaps even to Point Barrow. The wood meadow-grass (*Poa nemoralis*) is also abundant, and furnishes to cattle an agreeable and fattening pasturage. The blue joint-grass (*Calamagrostis Canadensis*) also reaches the latitude of Kotzebue Sound, and grows on the coast of Norton Sound with a truly surprising luxuriance. It reaches in very favorable situations four or even five feet in height, and averages at least three feet.* Many other grasses enumerated in the list of useful plants grow abundantly, and contribute largely to the whole amount of herbage. Two species of *Elymus* almost deceive the traveller with the aspect of grain fields, maturing a perceptible kernel, which the field-mice lay up in store.

Grain has never been sown to any extent in the Yukon Territory. Barley, I was informed, had once or twice been tried at Fort Yukon in small patches, and had succeeded in maturing the grain, though the straw was very short. The experiment was

* For the determination of these and other species of plants, I am indebted to the report of Dr. J. T. Rothrock, Professor of Botany in the Agricultural College of Pennsylvania, and late botanist of our Scientific Corps.

never carried any farther, however, the traders being obliged to devote all their energies to the collection of furs. No grain had ever been sown by the Russians at any of the posts.

Turnips and radishes always flourished extremely well at St. Michael's, and the same is said of Nuláto and Fort Yukon. Potatoes succeeded at the latter place, though the tubers were small. They were regularly planted for several years, until the seed was lost by freezing during the winter. At St. Michael's they did not do well.

Salad was successful, but cabbages would not head. The white round turnips grown at St. Michael's from European seed were the best I ever saw anywhere, and very large, some weighing five or six pounds. They were crisp and sweet, though occasionally a very large one would be hollow-hearted. The Russians preserved the tops also in vinegar for winter use.

There appears to be no reason why cattle, with proper winter protection, might not be successfully kept in most parts of the Yukon Territory. Fodder, as previously shown, is abundant.

A bull and cow were once sent to Fort Yukon by the Hudson Bay Company. They did well for some time, but the cow, while grazing on the river-bank, was precipitated upon a rock, by the giving way of the soil, and killed. Due notice was given of the accident, but for several years, in the annual supply of goods for Fort Yukon, the small quantum of butter usually sent was withheld, on the ground that there were "cattle" at that post. Finally, the commander killed the bull, determined if he could not have butter that he would at least have beef!

It must be borne in mind that this trading-post is north of the Arctic Circle, and the most northern point in Alaska inhabited by white men.

There are, as might be supposed, no tree fruits in the Yukon Territory suitable for food. Small fruit abounds in the greatest profusion. Among the various kinds may be noted red and black currants, gooseberries, cranberries, raspberries, thimbleberries, salmon berries, killikinick berries, blueberries, bearberries, twinberries, dewberries, service berries, mossberries, and roseberries. The latter, the fruit of *Rosa cinnamomea*, when touched by the frost, form a pleasant addition to the table, not being dry and woolly, as in our climate, but sweet and juicy. All these berries, but espe-

cially the salmon berry or *morósky* of the Russians, are excellent anti-scorbutics. From many of them the most piquant and delicious preserves are prepared by the Russians, and they form a very acceptable addition to the eternal diet of fish, bread, and tea, usual in the country.

The Aleutian District. — This comprises the Aleutian Islands, and part of the peninsula of Aliáska. From the presence of trees, the island of Kadiák and those adjacent to it belong rather to the Sitkan District. These islands contain many high mountains, many of them volcanic, some still evincing activity by smoking or emitting steam. Between them and the sea are rolling and moderately inclined hills and meadows. The soil is much of it rich, consisting of vegetable mould and dark-colored clays, with here and there light calcareous loam formed of decomposed rocks, rich in tertiary fossils. In many places the growth of sphagnum, indicating insufficient drainage, prevails over the perennial grasses natural to the soil, but the remedy is self-evident. In some places the soil is composed of decayed volcanic products such as ash and pumice; this is much of it rich and productive.

The climate of the district is moist and warm. The snow line, according to Chamisso, is 3,510 feet above the sea. The greatest cold recorded (on the island of Unaláshka) by Father Veniamínoff was zero of Fahrenheit. The highest point reached by the mercury during the same period was seventy-seven. The following abstract will show the range of the thermometer, and the relative frequency of good and bad weather during five years, including 1834: —

MEANS OF THE THERMOMETER, FOR FIVE YEARS.

Year.	7 A. M.	1 P. M.	9 P. M.	Ex. heat.	Ex. cold.	Range.
	°	°	°	°	°	°
1830 . .	35	38	34	77	0	77
1831 . .	36	40	34	64	7	57
1832 . .	39	42	38	77	7	70
1833 . .	38	41	36	76	5	71
Average for five. .	37	40.5	36	77	0	77

WEATHER, AVERAGE OF SEVEN YEARS.

Days.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL.
All clear . .	11	9	3	4	2	6	0	5	2	2	3	6	53
Half clear .	111	86	112	104	105	95	118	106	107	115	88	116	1263
All cloudy .	95	103	102	102	104	109	99	106	101	100	119	95	1235

These observations were made at Iliúluk, Unaláshka, by the Rev. Father Innocentius Veniamínoff. He states that from October to April the prevalent winds are from the north and west, and from April to October from the south and west. The thermometer is lowest in January and March, and highest in July and August.

The greater number of clear and pleasant days occur in January, February, and June, and usually follow a northerly wind. The barometer ranges from 27,415 to 29,437 inches, and on the whole is highest in December and lowest in July, rising with a north and falling with a south wind.

At this point it may not be irrelevant to make a comparison between this portion of Alaska and a very similar country, which has, however, been for centuries under cultivation. It will serve to show what human industry, aided by careful application of experience, may do with a country more barren, and nearly as cold and rainy as the Aleutian District of Alaska. I refer to the Highlands of Scotland and the adjacent islands, whose Scotch mists have become proverbial.

Dr. Graham, of Aberfoyle,* referring to the western district of Scotland, says that Ayreshire is very moist and damp, with a mild and temperate climate. Renfrewshire is visited with frequent and heavy rains. Dumbartonshire has the same character. Argyllshire is considered the most rainy county of Scotland.

"The vapors of the ocean are attracted by its lofty mountains, and the clouds discharge themselves in torrents on the valleys. The winters are for the most part mild and temperate, but the summers are frequently rainy and cold. The climate of the Zetland Islands resembles in most respects that of the Orkneys. Though the sky is inclement and the air moist, it is far from unhealthy. The rain continues not only for hours but for days, nay, even for weeks, if the wind blow from the west," &c.

* See Edinburgh Encyclopædia, art. Scotland, Vol. XVI., p. 738 *et seq.*

This description would answer very well for the most rainy portion of Alaska.

The mean annual temperature of Northern Scotland varies from 42° to 48°. That of Alaska in the Aleutian District, from 36° to 40°. Orkney and Zetland differ considerably, both in mean temperature and in amount of rainfall, the Shetland Islands having a less genial climate and a greater degree of humidity. The following abstract shows the mean temperature of Inverness on the east coast of Scotland. This is one of the most sheltered and protected points in Northern Scotland. Its latitude is precisely that of Kadiák.

Year.	Annual.	Winter.	Spring.	Summer.	Fall.
1821.	47°.83	39°.59	44°.93	55°.34	49°.90
1822.	48.02	39.44	47.22	57.79	47.59

The following shows the annual means of temperature in the Orkneys, also the means for each season, the barometer, and the hygrometer, taken from observations extending over seventeen years.

Spring.	Summer.	Autumn.	Winter.	Year.	Barometer.	Rainfall.
47°.87	54°.33	47°.62	39°.21	46°.26	29.762 in.	36.66 in.

The annual rainfall at Glasgow is forty inches; of Ayreshire, forty-two; Whitehaven, forty-eight; Restwick, sixty-seven; and Easthwaite, eighty-six (Enc. Br.). At Drymen, in Stirlingshire, on the west coast of Scotland, two hundred and five days during the year were found, in an average of fourteen years, to be more or less rainy. In Unaláshka, in seven years, the average, from Veniamínoff's observations, is one hundred and fifty days, on which he states only twenty-seven inches of rain fell. This is probably too low, and, judging from the amount of rain falling in other parts of Alaska, I venture to estimate the probable rainfall at about forty inches. The average rainfall in Stirlingshire is about forty-three inches; in Inverness, on the east coast of Scotland, there are about one hundred and fifty rainy days, and the aver-

age rainfall is about thirty inches, while in Bute, on the west coast, an average of seven years gave over forty-six and a half inches.

Let us now examine the productions of this country, which agrees so nearly in temperature and rainfall with what we know of the Aleutian District. It may reasonably prove an approximate index to what time may bring to pass in our new territory.

On the opposite page will be found statistics of the agricultural productions of the Highlands and adjacent islands of Scotland. These formed the principal support of over two millions of stock beside the farming and other population.

These figures show notably, that the quantity of potatoes, and also the quantity of wheat, is small, when compared with the other root crops or cereals.

The small Highland cattle are well known, and, like the small Siberian stock, admirably suited to such a climate and country. They produce tender, well-flavored beef, and extremely rich cream and butter, as I can testify from personal observation.

The climate of Scotland furnishes a very complete parallel with that of the Aleutian district of Alaska. The eastern coast, defended from the vapors of the Atlantic by its sheltering mountains, is much drier, and the extremes of heat and cold are more marked, than in the western portion or the islands. This eastern coast resembles the eastern part of Cook's Inlet in this respect, and the interior of Alaska generally.

The inhabitants of this district, principally Aleuts, are faithful and docile, but indolent and improvident. They make good sailors but poor farmers; and their attempts at farming have been principally under the direction of Russian masters.

There is no timber of any kind, larger than a shrub, on these islands; but there is no *prima facie* reason why some trees, if properly planted and drained, should not flourish. A few spruce were transplanted from Sitka in 1805 to Unaláshka. Most of them lived, but were not cared for, and the situation was unfavorable, so at the time of Kotzebue's visit they had not increased in size, and were looking very poorly, according to Chamisso.

The grasses in this climate, warmer than that of the Yukon Territory, and drier than the Sitkan District, attain an unwonted luxuriance.

Agricultural Statistics of the Highlands of Scotland and the adjacent Islands.*

	Occupants.	Wheat, bush.		Barley.		Oats.		Rye.		Beans & Pease.		Turnips.		Potatoes.		Swedish turnips, acres.	
	1855.	1854.	1855.	1854.	1855.	1854.	1855.	1854.	1855.	1854.	1855.	1854.	1855.	1854.	1855.	1854.	1855.
Argyll,	1,620	7,315	13,394	56,795	46,819	806,395	705,375	65,144	59,093	15,147	21,641	84,907	103,444	10,504	26,412	28	33
Arran,	152	4,373	4,688	1,974	619	49,139	42,154	7,086	4,655	4,403	3,523	6,497	4,344	671	1,493	22	10
Caithness,	504	4,644	5,607	9,549	7,609	748,215	613,799	98,924	56,292			143,416	120,787	8,310	5,931	28	
Inverness,	749	47,573	37,814	93,100	64,957	437,584	363,176	23,068	22,206	2,572	5,227	84,984	73,948	6,519	12,176	10	17
Orkney and Zetland,	262 / 39	180	393	5,727	2,746	238,728	258,789	108,168	105,525	342		39,230	42,536	6,532	6,261		2
Ross & Cromarty,	873	220,179	233,018	264,112	204,417	620,035	493,042	4,604	6,167	8,273	21,834	160,145	163,834	17,281	20,876	23	15
Sutherland,	141	10,183	8,885	51,936	35,759	93,637	80,136	1,065	2,693		114	32,052	29,707	1,540	1,633		
Totals,	4,340	294,447	303,799	483,193	362,726	2,993,733	2,557,871	308,059	256,631	30,737	52,339	551,231	528,600	51,357	74,782	111	77

	Occupants.	Carrots, acres.		Cabbage, acres.		Flax, acres.		Grass and Hay, acres.		Horses.	Cattle.	Sheep.	Swine.	Total stock.
	1855.	1854.	1855.	1854.	1855.	1854.	1855.	1854.	1855.	1855.	1855.	1855.	1855.	1855.
Argyll,	1,620	24	17	23	28	26	15	36,151	40,303	8,512	60,378	814,029	3,458	884,377
Arran,	152	4½	4	7	5	12½		3,002	2,588	2,367	3,010	25,630	360	29,394
Caithness,	504	¼		10	9	7	15	19,043	18,076	801	14,659	60,447	1,149	89,044
Inverness,	749	4	2	35	26	2	3	15,313	14,226	3,485	24,061	567,694	1,667	596,907
Orkney and Zetland,	262 / 39	4	4	30	35	1	1	4,954 / 232	8,297 / 535	2,437	8,128 / 1,250	10,815 / 5,845	1,337 / 50	22,179 / 7,703
Ross & Cromarty,	873	4	1	9	5	3	1	19,641	20,491	4,414	16,190	288,015	4,557	313,176
Sutherland,	141	2	4	3	2		1	3,936	4,446	914	3,642	200,553	550	205,659
Totals,	4,340	43¾	33	123	117	49½	36	102,272	108,962	22,930	131,318	1,973,028	13,128	2,148,339

* These statistics are official, from the Transactions of the Highland and Agricultural Society of Scotland, Vol. XV., 1856.

For example,* "Unaláshka, in the vicinity of Captain's Harbor, abounds in grasses, with a climate better adapted for haying than that of the coasts of Oregon. The cattle were remarkably fat, and the beef very tender and delicate, rarely surpassed by any well-fed stock. Milk was abundant. The good and available arable land lies chiefly near the coast, formed by the meeting and mingling of the detritus from mountain and valley with the sea sand, which formed a remarkably rich and genial soil, well suited for garden and root-crop culture. It occurs to us that many choice sunny hillsides here would produce good crops under the thrifty hand of enterprise. They are already cleared for the plough. Where grain-like grasses (*Elymus*) grow and mature well, it seems fair to infer that oats and barley would thrive, provided they were fall-sown, like the native grasses. This is abundantly verified by reference to the collections. Several of these grasses had already (September) matured and cast their seed before we arrived, showing sufficient length of season. Indeed, no grain will yield more than half a crop of poor quality (on the Pacific slope) when spring-sown, whether north or south." (Kellogg.)

The Russians affirm, with confirmation by later visitors, that potatoes are cultivated in almost every Aleutian village, and Veniamínoff states that (up to 1837) at the village in False Pass or Isanótski Strait they have raised them, and preserved the seed for planting, since the beginning of this century, without interruption; the inhabitants of this village, by so doing, having escaped the effects of several severe famines which visited their less provident and industrious neighbors.

Wild pease grow in great luxuriance near Unaláshka Bay, and, according to Mr. Davidson, might be advantageously cultivated. This species, the *Lathyrus maritimus* of botanists, grows as far north as latitude 64°.

The productions of all the islands to the westward resemble those of Unaláshka. In September, says Dr. Kellogg, the turnips here were large and of excellent quality; carrots, parsnips, and cabbages lacked careful attention, but were good. Wild parsnips (*Archangelica officinalis*) are abundant and edible through all

* See Report of Dr. Kellogg, Botanist to the United States Coast Survey Exploring Party. Ho. Ex. Doc. 177. XL. Congress, II. Session, p. 218.

these islands. At the height of 2,450 feet above the level of the sea, according to the Chamisso, most vegetation ceases. From the reports of Dr. Kellogg and others, there appears to be no doubt that cattle may be advantageously kept in the Aleutian District, provided competent farmers will take the matter in hand. The winter climate is as mild as that of the Highlands of Scotland, or the Orkneys, where stock has been successfully kept from time immemorial.*

Indeed, even in Iceland, where the temperature in winter sometimes gets as low as thirty-five below zero, we learn from Sir George Mackenzie that four fifths of their entire population of seventy thousand derive their maintenance from agriculture. Grain does not mature, but the grass lands (with their fisheries) are their greatest wealth, as they pasture their flocks of sheep and cattle, which form their chief means of subsistence and most important articles of commerce. The number of sheep in Iceland is estimated at 600,000; there are about 25,000 cattle and 30,000 horses. The export of wool in 1864 was 2,229,504 pounds, besides the amount consumed in the country.† After this, in the Aleutian District, where the cold is never greater than zero, we may look at least for results as favorable.

Golovín states that at one time, being called upon by the terms of their charter to "promote agriculture," the Russian American Company proposed to supply the Aleuts with stock, gratis, hoping also to prevent the famines caused by taking them off to hunt sea-otter during the fishing season.

The Aleuts, totally ignorant of the management of cattle, did not succeed very well. Confined at night in the low buildings,

* While these sheets are passing through the press, I am pleased to be able to record the complete confirmation of the above opinion, by practical tests. The agent of one of the trading companies upon the Island of St. Paul, Bering Sea (160 miles north of the Aleutian chain), in the fall of 1868, introduced cows, sheep, and goats. The Aleuts had been requested to provide hay, but, not knowing how to cure it, the whole was spoiled. On the arrival of the cattle, early in the winter, there was nothing for them to eat. They were, therefore, as the only resort, sheltered at night, and turned out to shift for themselves daily during the winter. They found abundant forage in the native wild barley (*Elymus*), and not only were well fed, but became (on the authority of an eye-witness) exceedingly sleek and fat. The calves and lambs did well. The stock is now considerably increased, and has every prospect of flourishing in future.

† See Report to United States State Department, on the Resources of Iceland and Greenland, by B. M. Peirce. Washington, 1868.

where the dry fish is hung up, the cows knocked it down and trampled on it, while their new masters did not know how to milk them. The hogs committed depredations in the garden patches, and annoyed the women by their grunting and squealing. The summer residences of the Aleuts consisted chiefly of tents, and the goats appeared to take pleasure in jumping upon and knocking down these tents in the night, to the great discomfort of the sleeping family; so they were very soon tired of them, and glad to get rid of them. In Cook's Inlet the natives were more intelligent, or had more experience, and their cattle did much better. Hogs were placed on a low island near the Churnobour Reef, in 1825, and multiplied exceedingly, living on the wild parsnips and other native plants; but they were destroyed by a tidal wave which swept over the island during the eruption of the volcano on the neighboring island of Únimak, two years after.

The Sitkan District. — This district extends from the southern boundary, including the mainland and islands, to the peninsula of Aliáska, and also Kadiák and the adjacent islands.

The surface of this part of the territory is rugged and mountainous in the extreme. The northern part alone furnishes any appreciable amount of arable land, level and suitable for cultivation. Small patches occur in the southern part here and there, where small farms might be located; but as a rule the mountains descend precipitously into the sea with their flanks covered with dense and almost impenetrable forests. These rise to an altitude of about fifteen hundred feet above the sea. Here and there a white streak shows where an avalanche has cut its way from the mountain-top, through the forest, to the water-side; and occasionally the shining front of a glacier occupies some deep ravine, contrasting curiously with the dense foliage on either side.

The canals and channels of the Alexander Archipelago form the highways of the country, and so intricate and tortuous are they that they afford access to almost every part of it without the necessity for setting foot on shore.

The soil is principally vegetable mould, with substrata of gravel or dark-colored clay. The soil of Cook's Inlet and Kadiák is of a similar character; but, from an admixture of volcanic sand thrown up by the waves, and abundant sandstone strata, it is lighter, drier, and better adapted for cultivation.

The climate of the southern portion of the district is very mild, but intolerably rainy. The annual rainfall at Sitka varies from sixty to ninety-five inches (which is, however, about the same as at the mouth of the Columbia), and the annual number of more or less rainy days varies from one hundred and ninety to two hundred and eighty-five. In Unaláshka the annual number of rainy days is about one hundred and fifty, and the annual fall of rain and melted snow is nearly forty inches. This last estimate is probably not too low for the island of Kadiák, and the eastern part of Cook's Inlet.

The annual means of the temperature about Sitka are by no means low, in spite of the rainy summers. The following table will indicate the means for the several seasons during the year ending October 31, 1868, from the report of the United States Coast Survey observers: —

METEOROLOGICAL ABSTRACT, SITKA.

Season.	Mean temp.	Rainfall.	Fair days.	Cloudy days.	Rainy days.	Snowy days.
		in.				
Spring . .	42°.6	14.64	22	70	33	15
Summer .	55 .7	10.14	21	71	36	0
Autumn .	45 .9	28.70	19	72	44	5
Winter. .	31 .9	14 59	44	47	21	6
Year . .	44.07	68 07	106	260	134	26

The minimum temperature for the year was 11°, the maximum 71°, giving the thermometer a range of sixty degrees. It will be noticed that the average temperature of the winter is hardly below the freezing-point, the greatest degree of cold being eleven above zero. The average of many years' observation places the mean *winter* temperature about thirty-three Fahrenheit, which is nearly that of Mannheim on the Rhine, and warmer than Munich, Vienna, or Berlin. It is about the same as that of Washington (1,095 miles farther south), and warmer than New York, Philadelphia, or Baltimore.* The cloudiness and rain of the *summer* season, however, prevent it from being nearly as warm as at any of the places above mentioned. Very little ice is made at Sitka; the snow, or rather slush, lies only for a few days in the street, and a

* See Report of Professor Lorin Blodgett in the Report of House Committee on Foreign Affairs, XL. Congress, II. Session, p. 36 *et seq.*

small species of humming-bird (*Selasphorus rufus*) breeds there in abundance.

The Indians inhabit the Alexander Archipelago and the coast nearly to Prince William Sound. North of this the Innuit are found on the coast and the Indians only in the interior. The former have made some progress in agriculture in Cook's Inlet and on Kadiák and the south shore of Aliáska. The remainder of the native population perform no agricultural labor whatever, except in collecting indigenous roots and berries for food.

In the southern part of this district there is little beside the timber, from an agricultural point of view. Near Fort Simpson, and at Sitka, Dr. Kellogg describes timothy, white clover, and medick, or burr clover, as flourishing in great luxuriance. Dr. Rothrock says the same of the native grasses in the interior ; but south of Prince William Sound there is so little lowland or prairie that there is no good opportunity for raising fodder, and the climate would render its preservation extremely precarious. The character of the country is so rugged that it would hardly be advisable to keep many cattle, and cereals, on acccount of the moisture, are not to be thought of.

At Sitka some vegetables do very well. Turnips, beans, pease, carrots, beets, lettuce, and radishes are successful. Potatoes are small and watery, from want of sun and excess of moisture. Cabbages are thrifty, but will not head. Cereals fail. Some few cattle are kept. The milk and cream are very good. Pork has a disageeable flavor from being fed on fish entrails, &c. There was, in 1865, one old horse who had evidently seen better days. Poultry has not succeeded well. Lütké says that the crows, who are extremely rapacious, devour all the young chickens, and also deprive the sucking pigs of their tails!

To the northern part of this district the above remarks do not apply. Kadiák and Cook's Inlet, northeast of Fort Alexander, have comparatively colder winters and drier and warmer summers than the islands and coast to the west or south of them. Haying can be successfully carried on, the native grasses being valuable for fodder, green or dry. Barley and oats have been successfully raised near the settlement of St. Nicholas on Cook's Inlet.

There is no want of wood, while it does not encroach on the

lowland, which is clear of underbrush and trees. Among the annual productions of the colony, in the official report of the Committee on the Colonies to the Emperor of Russia (St. Petersburg, 1863) are enumerated 108,000 pounds of salted meat, 170 casks of potatoes, 150 of turnips, and 180 casks of berries. Dr. Kellogg says of Kadiák: "Various herbs and grasses clothe the mountains to their summits. The summer climate here, unlike that of Sitka, is sufficiently fine for haying. We saw many mown valleys, from which a good supply of hay from the native grasses had been secured. The cattle were fat, and milk was abundant. The butter was yellow and appeared remarkably rich, though of a disagreeable flavor, which might be owing to the manner of making." The potatoes were better than at Sitka, but do not attain a very large size. It has already been mentioned that the cattle distributed to the natives by the Russian American Company did very well in Cook's Inlet. The Inlet freezes in winter as far west as the mouth of Chugáchik Bay.

The great agricultural staple of the southern Sitkan district is timber. I enumerate the forest trees in the order of their value.

Yellow Cedar (*C. Nutkatensis*, Spach.). — This is the most valuable wood on the Pacific coast. It combines a fine, close texture with considerable hardness, extreme durability, and pleasant fragrance. "For boat-building it is unsurpassed, from its lightness, toughness, ease of workmanship, and great durability." (Kellogg).

The forests of Puget Sound, which have been mentioned as more accessible than the Alaskan timber, are rapidly falling under the axe of the woodsman. Most of the more adjacent timber is already cut, and logs have now to be hauled some distance to the mills. The Puget Sound timber, as ship-building material, is far inferior to the yellow cedar. The latter is peculiar to Alaska, and the only good ship-timber on the Pacific coast. The high rates and short terms of insurance, on vessels built of Oregon pine, show its inferiority better than any amount of argument. The cedar somewhat resembles boxwood in texture and color, and has an agreeable odor. It is familiar to many, under the name of "camphor wood," in the shape of Chinese boxes.

"After ascending for some distance the mountain-side of the island of Sitka," says Mertens, the botanist, in a letter to a friend

at St. Petersburg, "the wood, which appears in increased denseness before us, consists particularly of a noble cedar. This is the timber most valued here. It occurs farther down, where the more predominant spruce-trees conceal it from view; but here it constitutes almost the entire timber." From its agreeable perfume, it is known to the Russians as "*dúshnik*," or scent-wood. This is the wood formerly exported to China, and returned to us famous for excluding moths, &c. In repairing old Fort Simpson, a stick of this cedar,* among the spruce timbers used for underpinning, was found to be the only sound log, after twenty-one years' trial. A wreck on the beach at Sitka, originally constructed of this timber, thirty-two years after is as sound as the day it was built; even the iron bolts are not corroded. A piece of this wreck is now in the office of the United States Coast Survey, at Washington.

Sitka Spruce or *White Pine* (*Abies Sitkensis*, Bong.). — This tree is well known in the lumber trade of the coast, attains a large size, and is noteworthy from its straight and tapering trunk. The wood is not so durable as the last-named, but is available for many purposes. It is found near the water's edge in great profusion throughout the Alexander Archipelago.

Hemlock (*Abies Mertensiana*, Bong.). — The timber of this species is often confounded with that of the preceding and more durable spruce, by lumber dealers, who style them both "Sitka pine." It is much larger in its growth than the next species, but has been considered a variety by some botanists.

Balsam Fir (*Abies Canadensis*, Michx.). — The timber of this tree is almost valueless, but the bark, with that of the last-named, is used in tanning, and the balsam in medicine and the arts.

Scrub Pine (*Pinus contorta*, Dougl.). — This pine seldom grows more than forty feet clear trunk, and eighteen inches in diameter. It passes north in the interior only to the junction of the Lewis or Táhco and the Pelly Rivers.

Other trees, such as the juniper, wild pear, and the like, may be of some use, but from their small size or scarcity are of little economical value.

* This cedar sometimes reaches a diameter of eight feet, but a common size is three to five feet.

In Kadiák, Dr. Kellogg found the growth of timber (*A. Sitkensis*) confined to the eastern valleys and slopes of the island. The largest seen were three feet in diameter and ninety to one hundred feet high. In the governor's yard were masts and spars over one hundred feet in length scarcely tapering two inches in thirty or forty feet; these were from Kadiák, but many are brought in rafts from Spruce Island, ten or fifteen miles off. The wooded district comprises the whole Alexander Archipelago and the mainland north to Lituya Bay; from this point to Prince William Sound little is known of the character or quantity of the timber, but in the latter locality, Cook's Inlet, and the entire interior, timber abounds, extending westward on to the peninsula of Aliáska and Kadiák and other islands of the Kadiák Archipelago.

General Summary. — While in the Yukon Territory we cannot look for self-supporting agricultural districts, nor reasonably expect any one to obtain a subsistence by farming alone; still, the settler called there to develop the resources of the country, be they lumber, fish, or furs, may have milk in his tea, and fresh vegetables on his table, if he possess the energy and knowledge to make the most of his opportunities. It will not be necessary for him to rely on the products of the chase alone, if he will but take the necessary care to provide shelter for his cattle, and to cut and gather for their winter fodder the perennial grasses which cover the prairies and lowlands.

In the Aleutian District is situated the larger proportion of the arable land of the territory of Alaska. In this and in the northern part of the Sitkan District the climatic conditions are the most favorable for agriculture in the territory. Their resemblance to the conditions which prevail in Northwestern Scotland and its islands has been already demonstrated at length; and the capability of this district for agriculture may therefore be reasonably inferred. Oats and barley, possibly wheat and rye, may succeed on these islands. Their abundant capacity for producing root crops of good quality, except perhaps potatoes, may be considered as settled. That cattle will do well there, there is no doubt, and the Pacific slope may yet derive its best butter and cheese from the Aleutian and northern Sitkan districts. Sheep, goats, and swine have not been thoroughly tried as yet, but the

inference is that they also would succeed. Most of the berries found in the Yukon Territory are also common to the Aleutian District, and the climate, unless from its moisture, presents no obstacles to the success of some kinds of fruit-trees. It is to be hoped, at least, that some one will try the experiment.

These islands, Kadiák, and Cook's Inlet are unquestionably the best agricultural country in our new possessions.

The resources of the southern Sitkan District lie apparently entirely in its timber. This is unquestionably needed on the Pacific coast, and a most valuable acquisition. No better lumbering district can be imagined, with water transportation everywhere, and mountain-sides so steep that a slide — easily made, of the least valuable timber — will conduct the logs directly to the water-side. Some vegetables, in the future as in the past, will be raised, and some stock kept in this part of Alaska, but probably never to any great extent.

Many reports may be found in circulation, even in official documents, in regard to Alaska, having very little foundation. While Massachusetts, since her settlement, has never exported any products of her soil except granite and ice, we may look in less than two hundred and fifty years to receive from Alaska supplies of ship-timber, butter, cheese, wool, mutton, and beef; and perhaps more palatable fruits may take the place of the well-flavored cranberries which have already found their way to San Francisco markets.

CHAPTER V.

Geology and Mineral Resources.

UNTIL a very recent date all the known facts in regard to the geology and mineralogy of Alaska were presented in the admirable work of Grewingk, and were due to the researches of the naturalists connected with the various exploring expeditions, or to the collections of Doróshin, Wossnéssensky, and others employed by the Russian authorities. Owing to the recent investigations of Whitney, Newberry, Heer, Kennicott, and the Scientific Corps of the Telegraph Expedition, our knowledge has been much increased, though a wide field still remains open for further investigation.

Much light has been, and doubtless will continue to be, thrown on the geology of the extreme northwest, from explorations in more southern latitudes, as a considerable parallelism must exist if we assume the coeval elevation of the northern and the southern portions of the different ranges.

Most geologists agree in referring the elevation of the Rocky Mountains to the Triassic period. There seems to be no reason why the Sierra Nevada and Cascade ranges should not be included in this generalization.

On the banks of the Porcupine River, near the boundary line, Robert Kennicott and the Rev. W. W. Kirkby obtained fossil corals and molluscan remains, referred by Mr. F. B. Meek to the Devonian age (Hamilton group). On the Arctic coast the summit of Cape Lisburne afforded *Tubiporites* and *Encrinites*, referred to the Carboniferous age by Buckland. Cape Thompson, on the same authority, contained madrepores and other corals, polyzoa, *Productus*, and other molluscan remains. The Carboniferous limestone from this locality, according to Grewingk, is almost entirely composed of the encrinites. At Cape Beaufort a vein of true Carboniferous coal was discovered near the shore. In

the Bay of Katmái, on the south coast of Aliáska, Wossnessénsky obtained Jurassic ammonites and fragments of belemnites. It is possible that the sulphuret of copper, reported from the north shore of Aliáska, may be contained in rocks of similar age. This completes the list of known localities of rocks older than the Cretaceous in Alaska.

Early in the Cretaceous period the Cascade Ranges and their analogues to the north were washed by the waves of the great Cretaceous sea. Later in the same epoch the Coast Ranges were uplifted by plutonic force. To the immense convulsions which elevated the great volcanic peaks of these ranges is probably due that immense system of canals, islands, fiords, and inlets which are so conspicuous on the northwest coast. Most of the Aleutian Islands are probably of later elevation.

Some portions of the sea-bed, having been simultaneously elevated, became covered with dense forests. From these the important beds of Cretaceous lignites on the west coast were formed. Gradual elevation of the coast continued. In the early Miocene (Eocene? of Foster, Mississippi Valley, p. 322) the climate of Greenland, Spitzbergen, the Arctic Islands, the northern part of America and Europe, was genial and temperate. Immense forests of trees, now confined to far more southern latitudes, existed all over the north. In the valley of the Yukon sycamores (*Platanus*) were abundant. On the shores of Cook's Inlet, pines (*Pinus*), redwoods (*Sequoia*), elms (*Ulmus*), four species of oaks (*Quercus*), three of walnuts (*Juglans*), ilex, maple, liquid-ambar, taxodium, and many other trees of the temperate zone, beside *Myrica* and *Spiræa*, grew in profusion. From this locality fifty-two species of fossil plants are described, of which twenty-two are common to beds of the same age in Northern Europe, and a smaller number to Northern Asia, Greenland, Spitzbergen, Vancouver Island, and Oregon. Species of *Sequoia*, *Corylus*, and *Pecopteris*, have been obtained from Kake Strait. The *débris* of these forests forms the great lignite beds of Fort Union, Nebraska, as well as most of the beds of northern lignite. A depression of this part of the continent then began; the sea covered the site of the sycamore groves of the Yukon, and in the highest rocks (the brown sandstones of Nuláto) of that valley we find the remains of *Ostrea* and other marine shell-fish. The last and still

uninterrupted era of elevation then commenced, probably attended at first with great volcanic activity. It is to this period that the elevation of many of the Aleutian Islands must be referred. In the Tertiary beds, which lie horizontally on their flanks, shell-fish, still living in the adjacent waters, are abundant. A colder era then set in, during which the arctic vegetation spread far southward of its present limit. For this change of temperature science has yet found no satisfactory solution. One of the most novel of the many theories proposed is that of Dr. Oswald Heer, who has, more than any other naturalist, investigated the fossil flora of the temperate period.

It is known to astronomers that the solar system passes through a vast orbit around some distant centre, and that it is constantly entering new regions of space. We come from the unknown, and plunge into the unknown; but so much is certain, that at present the solar system is in a region thinly peopled with stars. There is no reason to doubt that it may once have wandered through one of those celestial provinces where, as the telescope reveals, constellations are far more densely clustered. But, as every star is a blazing sun, the greater or lesser number of these heavenly bodies must evidently have a proportionate influence upon the temperature of space, and thus we may suppose that during the warm Miocene period the earth, being in a populous sidereal region, enjoyed the benefits of a higher temperature, which clothed even its poles with verdure. In the course of ages the sun conducted his herd of planets into more lonely and colder regions, which caused the warm Miocene era to be succeeded by the glacial period, and finally the sun emerged into a space of an intermediate character, which determines the present condition of the climate of our globe.*

At the commencement of the cold period, huge animals, covered with hair to resist the severe temperature, sprung into being. The elephant roamed over the tundri of North America and Asia. Later the reindeer and musk-ox followed the arctic vegetation as it spread southward. The northeastern portion of the United States was covered, as Greenland is now, with a nearly, if not quite, continuous glacier sheet. From the evidences before us we are unable to declare that this "general" ice sheet extended to Siberia, Alaska, or the entire west coast of America.

* See Hartwig, Polar World, p. 14.

The causes which produced the extinction of the elephant are unknown. It is more probable that it was due rather to the increased cold of the climate beyond what they were fitted to endure, than to a change for the warmer, as has been suggested by some authors. In the latter case, migration northward would have been open to them, and they would hardly be found preserved entire in masses of ice, as has been the case in Siberia. It is probable that the musk-ox and reindeer were long posterior to the elephant in their appearance on the earth. In the Yukon Valley the remains of the elephant are everywhere found on the surface, except when recently buried by fluviatile action; yet they are thoroughly fossilized and destitute of animal matter, except in the very interior of the tusks. On the other hand, the remains of the musk-ox found in similar localities still preserve an animal odor, and sometimes even slight remnants of the sinews.

During the period of most intense cold, large glaciers were formed in the gorges and ravines of the Coast Ranges. As the climate grew warmer, they diminished in size, and most of the more southern glaciers disappeared entirely. Whitney says,* "The explorations of the Geological Survey of California have demonstrated that there is no true Northern Drift within the limits of this State. Our detrital materials, which often form deposits of great extent and thickness, are invariably found to have been dependent for their origin and present condition on causes similar to those now in action, and to have been deposited on the flanks and at the bases of the nearest mountain ranges, by currents of water rushing down their slopes. While we have abundant evidence of the former existence of extensive glaciers in the Sierra Nevada, there is no reason to suppose that the ice was to any extent an effective agent in the transportation of the superficial deposits now resting on the flanks of the mountains. The glaciers were confined to the most elevated portions of the mountains, and, although the moraines which they have left as evidences of their former extension are often large and conspicuous, they are insignificant in comparison with the detrital masses formed by aqueous erosion. There is nothing anywhere in California which indicates a general glacial epoch, during which ice covered the whole country, and moved bodies of detritus over the

* Proceedings California Academy of Natural Sciences, Vol. III., p. 272.

surface, independently of its present configuration, as is seen throughout the Northeastern States."

The same is eminently true, as far as we know, of Alaska.

For opportunities of studying the phenomena of glaciation, American students need no longer turn to the Alps. From Bute Inlet to Unimak Pass almost every deep gorge of considerable size between the high mountains, for which this coast is so remarkable, has at its head a glacier, or the remains of one. Some of these glaciers are of extraordinary size and grandeur. The ice, broken from their overhanging terminations, has given rise to such names as Icy Strait and Icy Bay; and smaller fragments, concealed by the adherent mud and stones, have in several instances been taken for permanent rocks by the earlier navigators. The question naturally arises, To what extent have the glaciers aided in producing the extraordinary system of fiords which characterizes this coast? Or is that system entirely due to other causes, and are the glaciers merely incidental?

If the excavation of these innumerable channels and inlets be due to glacial action, we shall naturally look for unmistakable evidences of the fact in the grinding and polishing of the harder rocks which remain, the denudation in great part of the softer and more friable ones, the transportation of large quantities of material, and its deposition off the present coast-line, in submarine moraines, of which the soundings should give evidence. The ice power which would excavate a channel fifty fathoms deep would leave no uncertain or dubious evidences behind it.*

If, on the other hand, we do not look to glacial action for a solution of the problem, we may suggest the hypothesis, that the same power which raised the Coast Ranges to their stupendous height, which lifted up the peaks of Crillon, Fairweather, and St. Elias, at the same time upheaved the strata on either side of the main line of elevation, and nearly parallel with it, thus producing deep incised valleys and precipitous mountains, gorges, and ravines, of which the submarine portion, by its position, became an archipelago; while that above the sea, of a similar character, in a

* It is probable that glaciers seldom *excavate*. They erode and denude, but rarely scoop out material. I can find no record of any excavations more than two feet deep due to the action of ice alone. The torrents which flow from under glaciers do a far greater amount of excavating than the ice itself. The term "excavate" has been very loosely used in connection with ice.

latitude and under climatic influences which produced a greater deposition (in the form of snow) than evaporation, became, through its physical conformation, the nurse of glaciers.

The weight of available evidence does not seem to support the first view of the case. The lower summits of gneiss, granite, and dolorite, which must have been covered in past time with the superincumbent ice sheet, if it existed, and to which one would look for such evidences as polishing, striation, and grinding down, offer none. Their outlines, and the rocks of which they are composed, are sharp, and exhibit no evidences of abrasion or erosion.

The absence of terraces, of any extent, has been noticed by Professor Blake, in his account of the glaciers of the Stikine River. Wossnessénsky describes none, nor does Whymper, in his description of the immense glaciers of Bute Inlet. Nor in my own observations in the vicinity of Sitka, and the peninsula of Aliáska, have I met with any cases of this most characteristic phenomenon of general glacial action. If the glacier field once extended over the entire coast, previous to the formation of the archipelago, we may conclude that the more northern portions of the territory, north of the Alaskan Mountains, would not have been exempt from glacial action. Three years' exploration, with a strong disposition to develop the facts of the case, failed to obtain on the shores of Norton Sound, or in the valley of the Yukon, any evidence whatever of such action. Once only were polished rocks met with, and they proved on examination to be "slicken-sides"; while no instances of transported materials, scratches, boulders, or moraines, were anywhere met with. The rolling and moderately elevated character of the country does not favor the development of local glaciers, such as now exist on the more southern coasts of Alaska.

Thomas Simpson especially remarks the absence of drift boulders on the Arctic coast, west of Return Reef of Franklin. These most characteristic evidences of glacial action, which a child could not overlook, are quite absent in the valley of the Yukon.

The soft Tertiary strata everywhere, though broken, contorted, and sometimes metamorphosed, are not denuded, except from the evident local action of local glaciers.

We may assume that, first, the general course of a continental

or continuous coast glacier will be parallel with the general slope of the coast, irrespective of local topography to any material extent. Second, that as the excavations, rock, scratches, transportation of material, and so on, of course, will trend in the same line, consequently the terminal and other moraines, if any exist, will be found to cross the line of general movement at right angles. Third, it has also been noticed that the smaller hills, or mountains, which lay in the path of the New England glacier sheet, according to Vose and other geologists,* always have the side of the longest slope facing the direction from which the ice sheet came.

Glancing on the chart of the Alexander Archipelago, let us examine this assemblage of islands, inlets, and canals, which, by superficial observers, has been referred to the action of ice.

We find the first assumption directly contradicted. The line of "excavation," if we still feel disposed to use that term, is at right angles to the watershed, to the general slope of the coast mountains, and to the course of many of the existing local glaciers.

Assuming against reason, for the sake of argument, that this was the line of movement of the glacier sheet (as it must have been, if any existed), we should, under the second assumption, look to find across the canals, at intervals, or at least in solitary instances, bars or submarine moraines, composed of the detritus from the glacial sheet, at a time when the rate of melting was equal to its rate of progress, the termination and point where the detritus was deposited consequently remaining nearly stationary. If any such exist, which under the circumstances we may reasonably doubt, the soundings would give unequivocal evidences of it. It is, perhaps, needless to say, that as yet we have no such information. In regard to the third point, Mr. Davidson mentions in his report the fact that the abrupt side of the mountains is almost invariably the east or northeast side, which excludes the idea of a glacier sheet from any direction, except from the sea, but agrees well with the hypothesis of an upheaval coeval and parallel with that of the Coast Ranges.

It has already been mentioned that the deposition of detritus, in the form of shoals, off the largest known glaciers of this coast,

* Memoirs of the Boston Society of Natural History.

is very small, especially when contrasted with that deposited by even the smaller rivers. The excavation of such immense inlets and channels by ice action would necessarily form large quantities of eroded material, which must, by its specific gravity, have been deposited somewhere near the coast.

It is therefore considered unnecessary to pursue the subject of a general glacier sheet any further, and it only remains to discuss the indications by which we may determine the former extent and amount of influence of the local glaciers.

But little has been learned so far in regard to the rate of motion, and other circumstances connected with the magnificent glacier system of the coast ranges of British Columbia and Alaska. A road, built across one of the glaciers of Bute Inlet by Mr. Waddington, of Victoria, was noticed to have moved some ten feet out of line during the winter season, when the road-builders returned in the spring. No regular observations have been made, however.

That the majority of the glaciers are decreasing in size, and hence that the climate is becoming drier or warmer, is evident. The glaciers of Bute Inlet and the Stikíne have notably receded, leaving their tracks unmistakable. The erosive action of the glaciers is comparatively small; from some of them issue streams of water nearly pure,* and they do not give rise to any very extensive shoals off the coast.

The case is quite different with the rivers. The Stikíne, the Copper, the Suchitno, all bring down quantities of detritus, annually altering, to some extent, the coast line in the immediate vicinity of their embouchments.

North of the peninsula of Aliáska this river action is going on in a far grander manner. The Nushergák, Kuskoqúim, and Yukon rivers annually discharge from their mouths immense quantities of earthy matter, which is deposited in fine mud, and replaces, in Bering Sea, the black volcanic sand which comes up on the lead, when south of the islands. This mud has formed the largest submarine plateau (with so slight a depth of water) in the world, covering two thirds of Bering Sea, and even extending for an indefinite distance through and beyond Bering Strait. A deep sea valley exists, however, on the west side of Bering Sea,

* See Whymper, p. 27.

between the Alaska plateau and the shoals of Anádyr Gulf, culminating in the mouth of Plover Bay, Eastern Siberia.*

When the spring freshets of the Yukon come down, the water is laden with blocks of ice, each of which transports its share of pebbles, earth, and sand; the current, twelve to twenty fathoms deep, in places, tears away with resistless violence alluvial banks formed years before, and carries them along, depositing them little by little, thus changing annually its channel and depth of water, cutting away islands and forming new ones, and lessening slowly, but surely, the depth of water in Bering Sea. I have noticed, on exposed banks, one hundred and thirty annual layers of earth and vegetable matter, in a depth of alluvium of only six feet.

There can be but little doubt that the whole of the peninsular portion of Alaska, west of the 150th degree of longitude, is undergoing gradual elevation. This is accelerated occasionally by volcanic action in localities of limited extent. A single instance is known in Chalmers Bay, Prince William Sound, of subsidence of a low point formerly covered with trees, whose stumps are now far below the lowest tide level. But this, in the absence of further information, must be regarded as a merely local phenomenon. The coast of Eastern Siberia is also undergoing elevation.

The facts in support of the above hypothesis are many. On the neck of land between Norton Bay and Kotzebue Sound the shores are strewn with driftwood piled in winrows by the fall storms, and derived originally from the spring freshets of the Yukon and the Kuskoqúim. Far above the level which the most severe storms and the highest tides now attain, lie regular rows of wood, much decayed, but still preserving its shape, and evidently brought there by the waves. This may also be noted on the southeast end of St. Michael's Island, Norton Sound. In the mouth of the Canal, or passage between St. Michael's and the mainland, not far from the fort of the trading company, lie a cluster of basaltic rocks, full of amygdaloidal cavities. The upper portion of these rocks is at least fifteen feet above the level of high water, and a little grass grows there, but in the cavities can still be found, *in situ*, portions of the shelly covering

* Captain Fish, of the whaling brig Victoria, reports here $\frac{0}{101}$ in the mouth of the bay; and $\frac{0}{50}$ was obtained farther in, by the Western Union Telegraph Expedition.

of a species of barnacle (*balanus*), which must have lived there when it was daily covered by the tide. The flanks of the Aleutian Islands in many localities bear nearly horizontal Tertiary strata, which contain fossil shells, undoubtedly identical as to species with living forms now abundant in the waters which surround them, showing that they have been elevated within a comparatively short (geological) time.

The lagoon of Isanótski, long marked from French surveys in the last century as a navigable though dangerous passage, is now an impassable *cul-de-sac*. This, however, may be due to imperfections in the original survey, and not to subsequent elevation.

Captain Riedell, of the bark Constantine, states that in the inner portion of the south harbor of Únga Island, one of the Shúmagins, where he had previously obtained four fathoms, muddy bottom, after the slight earthquake shock of May, 1868, he sounded, obtaining only four feet in the same place. The lower portion of the harbor retained, however, abundance of water. Careful and exact charts of given localities are needed to determine with accuracy the rate of the gradual elevation.

Should the elevation of the land and the annual deposition of earthy material continue, geologically the time is not far distant when a great part of Bering Sea may become dry land, and Asia be joined unto America.

Plutonic forces have been more or less active in Alaska since the end of the Miocene period. Their violence appears to have diminished during historical times. Many formerly active volcanoes have become quiet or extinct, earthquake shocks are less frequent and less violent than formerly, and no remarkable eruption has taken place for many years. The following information in regard to igneous action is derived from Grewingk.

1690. A crater was formed on the mountain called Kháginak in the island of Únimak.

1700 to 1710. The volcano on Ámak Island and two others were active. (At present Ámak volcano is entirely extinct.)

1741. Iliámna volcano became quiet.

1760. Adákh, Gorelói, Chechítno, and Átka volcanoes smoked for the first time in history. Koniúshi Island rose.

1762. Pávloff volcano on Aliáska showed signs of activity.

1763. Tánaga Peak became active, and continued so until 1770. Solfataras appeared upon Kánaga.

1768. Two volcanoes were active on Unaláshka. Medviédnikoff and Walrus peaks on Aliáska became active.

1770. Amúkhta volcanoes became quiet.

1772. Sémi-sopóchnoi Islands lost their activity.

1774. One of the islands of the Four Craters became active.

1775. Mount Calder, on Prince of Wales Island, became active, and one of the Únimak volcanoes emitted fire occasionally until 1778.

1776. Sítignak emitted flames in July.

1778. Iliámna resumed and has since kept in a state of activity. Shisháldin smoked.

1784. Vsévidoff volcano smoked. An eruption took place from the Chechítno peak in July.

1786. Séguam and Amúkhta volcanoes became active; the former rested in 1790, and the latter the following year. Kánaga emitted flames. The northern crater of Pávloff Peak became active. It fell in, and after a violent earthquake its activity ceased.

1788. An earthquake, attended with a tidal wave, visited the Shúmagins. On the 27th of July the water overflowed Sánnak Island, destroying the hogs which had been placed there. From this point the inundation extended to Aliáska.

1790. Akután smoked. Vsévidoff, Kánaga, and Sémi-sopóchnoi were active. Mákushin on Unaláshka had active periods occasionally from this time to 1792, and Shisháldin on Únimak until 1825. An eruption occurred near Chúgach Gulf.

1791. In June, Tánaga and Kánaga smoked.

1792. Great Sitkin and Gorelói emitted fire until the end of May. On the 1st of June Sémi-sopóchnoi smoked.

1795. A small volcano on the southwest end of Únimak exploded, and fell in with a fearful noise. The phenomenon was attended by dense clouds of white ashes. West of that point there are hot marshes.

1796. Edgecumbe is said to have smoked for the only time in history. On the 1st of May, according to Baránoff, a storm arose near Úmnak, and continued for several days. It was very dark all this time, and low noises resembling thunder

1796. were continually heard. On the third day the sky became clear very early, and a flame was seen arising from the sea between Unaláshka and Úmnak. North of the latter, smoke was observed for ten days. At the end of this time, from Unaláshka a round white mass was seen rising out of the sea. During the night fire arose in the same locality, so that objects ten miles off were distinctly visible. An earthquake shook Unaláshka, and was accompanied by fearful noises. Rocks were thrown from the new volcano as far as Úmnak. With sunrise the noises ceased, the fire diminished, and the new island was seen in the form of a black cone. It was named after St. John the Theologian (*Joánna Bogoslóva*). A month later it was considerably higher, and emitted flames constantly. It continued to rise, but steam and smoke took the place of fire. Four years after no smoke was seen, and in 1804 the island was visited by hunters. They found the sea warm around it, and the soil in many places too hot to walk on. It was said to be two miles and a half around, and three hundred and fifty feet high. The soil emitted an odor of bitumen. It is forty-five versts, or nearly thirty-four miles, due west from the north point of Unaláshka. In 1806 lava flowed from the summit into the sea on the north side. Fissures appeared, lined with crystals of sulphur. Veniamínoff says that it ceased to enlarge in 1823, when it was of a pyramidal form, and about fifteen hundred feet high. There are many strong currents about it, and a reef extends from a rock west of it to Úmnak.

From this time to 1800 the Four Craters remained active. The crater of Ámak was unquiet.

1802. Mákushin emitted flames with great vigor. Shocks of earthquake were felt in Unaláshka.

1812. The Sarýcheff volcano in Átka was in violent eruption. The earthquakes were most violent, and terrified the inhabitants.

1817. Yunáska smoked in April. Upon Úmnak a tremendous earthquake occurred, with a violent southwest storm. One of the north peaks emitted clouds of ashes and smoke. At daybreak the ashes covered the soil, from twelve to twenty inches thick. A small river near the factory was

1817. filled with them, and contained no more fish for a year. Some of the ashes, and stones even, are said to have reached Unaláshka and Únimak. A village on the northeast end of Úmnak, near Deep Bay, was covered by immense stones and ashes. The inhabitants were fortunately absent at the Príbyloff Islands. They built a new village on a spot which had been under water before the earthquake. A previously navigable channel was filled up with the stones ejected during the eruption.

1818. An earthquake occurred in the vicinity of Mákushin, and great changes are said to have taken place in Amátignak.

1819. Mount Wrangell emitted fire, and the Redoubt volcano of Cook's Inlet smoked.

1820. Bogoslóva smoked.

1824. Shisháldin emitted flames, and a mighty eruption took place on Yunáska.

1825. On the 10th of March subterranean detonations were heard in Únimak, and as far as Unaláshka. On the northeast side of Isanótski a new crater broke forth. In five or six places flames and smoke poured out. At noon the darkness of night reigned, even in Walrus Village forty-five miles away. Black ashes covered the peninsula of Aliáska as far as Pávloff Bay. At the same time a torrent of water burst out of the south side of the mountain, carrying pumice and ashes with it, and covering a strip of country ten miles wide; even the sea continued muddy until late in the autumn.

1826. Further disturbances took place on Únimak, and ashes fell on the 11th of October. In June two earthquakes shook Unaláshka.

1827. From this time until 1829, Shisháldin and Pogrúmnoi volcanoes emitted fire. Koniúshi and Kánaga smoked, while in June an earthquake was felt on Copper Island.

1828. Little Sitkin, Akhún, Akután, Tának-Ángunakh, Átka, Koniúshi, Góreloi, and Shisháldin smoked. The same disturbances continued for two years.

1830. Korovín and Átka smoked. An eruption occurred on Yunáska and the southwest end of Úmnak. In November a fearful noise was heard through the fog on Únimak.

1830. When the mist cleared away, Isanótski was black, all the snow had disappeared, and flames shot forth from fissures on the north, west, and south. On the north side, the flames appeared three times a minute, followed by a stronger burst of flames and smoke. In March, 1831, the fissures had closed, except the northern one, where a mass of red-hot lava was long visible. Bilberry bushes, before unknown, are growing in the stratum of ashes thrown out by Pogrúmnoi. After the eruption, fish floated dead on the water, and shell-fish disappeared. Since that time other craters, formerly active, have become quiet.

1836. An earthquake occurred on the Príbyloff Islands, on the 2d of April. The shock was so severe that people could not stand erect, and was preceded by a loud noise. The rocks were split and broken in many places, and the same phenomena occurred with less violence in August.

1838. Shisháldin emitted fire, and smoke arose from three points. The Four Craters, Mákushin, Akután, Mount Veniamínoff, and Pávloff volcano smoked.

1843. On the 23d of November, Mount St. Helen's broke out.

1844. Koróvin and Mákushin smoked lightly.

1854. Light shocks occurred in the Káviak peninsula.

1862. Similar disturbances were reported by the natives.

1865. When the vessels of the telegraph fleet passed through Únimak Pass in September, Shisháldin was smoking, and light was observed at night in the direction of Akhún, and Akután. Mákushin was also active.

1867. In August a shock of earthquake occurred on the Lower Yukon, and was felt at the Mission. Ámak Island had lost its activity entirely.

The records of these phenomena are exceedingly incomplete; but that they are less frequent and less severe than formerly, there can be no doubt.

The coal-bearing strata of Queen Charlotte's Island, about which some doubt has existed, are proved, by fossils in the possession of Professor Whitney, to be of Cretaceous age. The same formation doubtless extends northward into the Alexander Archipelago, and its extent has not been determined. The

rocks near Sitka are clay slates, argillite, grauwacke, and a hard conglomerate or grit. In Noquashínski Bay finely crystallized white marble occurs; sienitic granite is found near Deep Lake, and in St. John's Bay Mr. Blake found fine black shales and friable sandstones, with fragments of bituminous coal, among the detritus. Near the northwest end of Deep Lake are springs with a temperature of 120° Fahrenheit. They contain carbonate of lime and sulphur in considerable quantities. The rocks of Mount Vostóvia are sienitic. On the shores of Barlow's Bay, Admiralty Island mica schists, with a vertical dip, enclose quartz veins containing iron pyrites. At the head of Lynn Canal fragments of finely crystalline white marble were found with sienite and slate.

Granite and metamorphic rocks are abundant along the coast from Cape Spencer to Cape St. Elias. At the former point Tertiary strata have been reported.

The southeast shore of Kenái is metamorphic. The shores of Chugáchik Bay and Cook's Inlet on the east side, as far as the Káknu River, are Tertiary, containing beds of coal. North of the Káknu River, clay slates with veins of gold-bearing diorite occur. In the alluvium of that river gold has been detected. The rocks of Kadiák are chiefly metamorphic, trachytic, and chloritic slates with veins of quartz. Tertiary sandstones also occur with fossils. Volcanic and metamorphic rocks, porphyry, black Jurassic shales, and Tertiary beds, occur on the adjacent shores of Aliáska. Farther west the Tertiary rocks are more extensive, and frequently contain lignite and fossil wood. They have been noted upon Tigálda, Akhún, Unaláshka, Úmnak, Amchítka, and St. Paul's. The islands of Akután, Bogoslóva, Four Craters, Yunáska, Amúkhta, St. George, Sémi-sopóchnoi, Keéska, Ámak, and Agattú, are supposed to be entirely volcanic. Unaláshka, Ámlia, Átka, Amchítka, and Attú also contain metamorphic rocks or porphyry. Little Sítkin is the most western volcano. The Commander's Islands are volcanic and metamorphic; native copper has been found on the more eastern, from which it takes its name. The St. Matthew group and St. Lawrence are volcanic and metamorphic. Granitic rocks are known to exist on the Kuskoqúim. Marine Miocene strata occupy a small basin on the Yukon near Nuláto. In one place near the Shamán Mountain is a small outcrop of lignite and shale much metamorphosed.

Underneath these lie gray Miocene sandstones with vegetable remains extending to the sea-coast. All these rocks are much bent, contorted, and metamorphosed in some localities, from the intrusion of trachytic and basaltic rocks. Quartz veins cut the strata in many places. Underneath the sandstones are metamorphosed quartzites which compose the greater proportion of the strata in the Yukon Valley, below the mouth of the Porcupine. That portion of the country near the delta is mostly alluvium with metamorphic rocks. From St. Michael's Island, which contains an extinct crater, to the Yukon, extends a belt of basaltic rocks containing olivine, and of recent (geological) age. The natives have a tradition that St. Michael's has been thrice submerged.

Cape Denbigh is said to be porphyritic. The rocks near Grantley Harbor are quartzite and granitic. In Kotzebue Sound, basalt, metamorphic rocks, granite, and alluvium are the prevalent strata. Granitic rocks occur only once on the Yukon near the Rapids. Obsidian is occasionally found, and conglomerate beds exist in one or two places. The character of the Arctic coast has already been mentioned.

Any account of Alaska would be incomplete which did not include a mention of the remarkable hot and mineral springs which are so numerous. Those of Sitka have been already mentioned. Whitby records the existence of hot saline springs below high-water mark near Sitka. In Parenósa Bay, opposite Únga Island, on the south coast of Aliáska, are several hot springs. Others are situated on Ámagat Island, near Aliáska, and still others in Port Möller, on the north side of the peninsula. A lake of water containing sulphur in solution exists on Únimak. Hot marshes are found near Pogrúmnoi volcano. Numerous boiling springs on the northeast side of Akután form a small rivulet, and an extinct crater is filled with water of a bitter taste. On a small island southeast of Akhún, hot springs are found between tide-marks. In Unaláshka, near Captain's Harbor, a thermal spring exists, with a temperature of 94° Fahrenheit, containing sulphur in solution. Noises which sound like the reports of cannon are often heard, and have been mistaken for coming vessels. The natives have a tradition that long ago the mountains fought with each other, and Mákushin remained victor.

Many hot springs exist in a small valley of Úmnak. One of these rises two feet and falls again, four times an hour. The water is boiling, and there is no perceptible opening in the soil. Near Deep Bay are several springs ranging from 212° Fahrenheit to lukewarm. The Aleuts are accustomed to bathe in some of them.

Upon the island of Átka many such springs occur. The water of some of them contains lime and sulphur, but is less bitter than that at Sitka. These are five miles from Koróvin Bay, and their temperature is about 167° Fahrenheit. At a greater altitude, upon Kóni volcano are found mud craters two feet in diameter at the top, of a funnel shape, diminishing to five inches at the bottom. They are frequently full of mud in a state of ebullition. Sulphurous odors and subterranean noises, like the escape of steam, are always noticeable. If a stick is thrust into the ground and withdrawn, sulphurous vapors arise with great force. Between Koróvin and Klúcheff volcanoes is a verdant valley. Here the warmth arising from the hot springs renders the vegetation rich, and this, with the abundance of flowers, presents a marked contrast to the bare and sterile flanks of the volcanoes. Ascending, the traveller leaves perpetual summer for bare and forbidding lava rocks and eternal snow.

There are many hot springs upon the island of Adákh. Boiling springs on Kánaga have been used for cooking food by the Aleuts from time immemorial. Góreloi consists of a vast smoking cone eighteen miles around. It is supposed to be one of the highest in the archipelago.

Very active hot springs exist on Sítignak Island.

A lake on Beaver Island of the Príbyloff group is said to be strongly impregnated with nitre.

As we may turn to the coasts of Alaska to study glaciers, at their very sides we may also give our attention to exhibitions of plutonic force and volcanic activity which are almost equal to any in the world.

Economic Geology. — The most valuable of the previously mentioned formations, from an economic point of view, is the Tertiary. In it are contained those beds of coal which have been so often reported on the northwest coast. The following is a list of the known localities up to date of writing: Port Gardner; Hood's

Bay, Admiralty Island (good, bituminous, used by the Saginaw in 1868); Hamilton Harbor, on the east side of Kake Strait (a vein of good bituminous coal opened here in July, 1868); Krúznoff Bay, Admiralty Island; Kúiu Island; Kupriánoff Island; Port Camden, Kake Strait (a six-inch vein reported in hard rock, with a southerly dip of 35°); St. John's Bay, Baránoff Island, (fragments in *débris* of a glacier; recent reports state that the vein has been discovered, and the coal successfully used on a United States steamer); Coal Harbor, Únga Island (examined by the writer in 1865; the coal is of poor quality, in thin veins, much mixed with slate and silicified wood; quite valueless); south coast of Aliáska ("Black lignites," Erman); Cape Beaufort, Arctic coast (a small vein of true Carboniferous coal); Akhún (coal said to occur by Lütké); Unaláshka (near Captain's Harbor, small lignite veins, according to Veniamínoff); Átka (lignite of poor quality found near Sand Bay); Amchítka (lignite, Grewingk); Wrangell Harbor (coal reported, of good quality, by General Halleck); and finally Cook's Inlet. In the latter locality are found the most promising deposits. North of Cape Staríchkoff, the coal is found in two parallel layers. They are variously reported as from eighteen inches to seven feet in thickness, and are found from thirty-six to sixty feet below the top of the bank. Farther to the north a third layer appears. They continue nearly to Cape Nenílchik, with a north-northeast dip, and appear again on the northern side of the cape, and then continue, first with a south-southeast dip, and afterwards horizontally, to the mouth of a small stream. The coal is Tertiary; and, like most Tertiary coals, is inferior to the Carboniferous coals both in quality and thickness of seams. The annexed table will show at a glance the comparative value and composition of the coals of the different formations on the west coast of America, and the best Carboniferous coals of Pennsylvania and England.

The table shows at a glance, better than any description could do, the superior quality of the Cook's Inlet coal, not only over all the Miocene coals, but also over all the Cretaceous coals of the Pacific slope.*

* The analyses of the Alaska coal are due to Professor J. S. Newberry of the School of Mines, Columbia College, New York, and State geologist of Ohio. Professor Newberry is excelled by none in his knowledge of the Tertiary coal-bearing deposits

ANALYSES OF COAL.

	Locality of the coal.	Moisture.	Fixed carbon.	Volatile combustible matter.	Ash.	Sulphur.	Character.
Carboniferous.	Pittsburg, Pennsylvania	2.34	55.82	34.31	7.16	?	Bituminous.
	Ormsby, Pennsylvania	4.00	66.56	26.93	2.50	?	Bituminous.
	Kentucky	2 00	56.01	37.89	4.10		Cannel.
	Lehigh, Pennsylvania	2.34	88.05	2.94	6.66		Anthracite.
	Newcastle, England	0.99	61.70	33.55	3.75	0.23	Bituminous.
Cretaceous.	Nanaimo, Vancouver Island	2.98	46.31	32.16	18.55	?	Lignitic.
	Bellingham Bay	8.39	45.69	33.26	12 66	?	Lignitic.
	Mount Diablo, California, best "black diamond"	14.69	46.84	33.89	4.58	?	Lignitic.
Miocene tert.	Coose Bay, Oregon	20 09	41.98	32.59	5.34	?	Lignitic.
	Carbon Station, Pacific Railroad	11.60	51.67	27.68	6.17	2.90	Lignitic.
	Weber River, Pacific Railroad	9.45	26.21	58.32	3.64	2.40	Lignitic.
	Cook's Inlet, Alaska	1.25	49.89	39.87	7 82	1.20	Lignitic.

Anthracite has been several times reported from various parts of Alaska. It is probable that the specimens collected may owe their quality to local metamorphism of the rocks by heat rather than to the general character of any large deposit. The Cook's Inlet coal, it will be noted, contains only 0.37 per cent less combustible matter, and only 0.66 per cent more ash than good Pittsburg bituminous coal, which difference is fully made up by the 1.09 per cent more water which exists in the latter. The amount of sulphur is less than in either of the two best Tertiary coals on the line of the Pacific Railroad, and the amount of moisture is less than in any other American coal tabulated.

The discoverers of these outcrops of coal must recollect, however, that the value of coal is not due to its quality alone. Commercially speaking, a vein of coal less than three feet thick (of clear coal) is of very little value, except for local use. The dip of the strata, its faults or foldings, the solid or crumbling character of the superincumbent strata, the distance from a market, and the facilities for mining, shipping, and transportation, — all these are as important in determining the value of a deposit as the character of the coal itself.

of the United States, and says: "This coal is fully equal to any found on the west coast, not excepting those of Vancouver Island and Bellingham Bay." For the use of the analyses I am indebted to the Smithsonian Institution.

The existence of deposits of coal of permanent value, in Alaska, though very probable, can only be determined by a thorough examination, and is yet to be proved.

Amber occurs extensively in these beds associated with lignite. It is common in the lignite deposits on the peninsula of Aliáska, and I have obtained it from the alluvium in the delta of the Yukon. It is also found in the vicinity of most of the Tertiary coal deposits on the Fox Islands, and is an article of ornament with the natives, who carve it into rude beads. Grewingk says that the natives collect it at Amber Bay, Aliáska, and sell it to the Kadiák traders. It is also found in the Tertiary strata of Kadiák. A small lake among the mountains of Unaláshka contains an amber-bearing island. On the island of Úmnak, near Yagórkoffski Village, is a steep bank of friable material. The natives spread a walrus-skin between two boats at the foot of the bank and dislodge the earth, which falls upon the skin, and from this *débris* much amber is obtained. It is also said to be found on the Kuskoqúim.

Among the other mineral products of Alaska, probably of this age, is petroleum. This is found floating on the surface of a lake near the bay of Katmái, Aliáska Peninsula. It is of the specific gravity of 25° (Beaume),* quite odorless, and in its crude state an excellent lubricator for machinery of any kind.

The beds of white marble near Sitka and in Lynn Canal, if uniformly of as good quality as the specimens obtained by the United States Coast Survey officers, will prove of great value. The natives have long been in the habit of carving images, labrets, &c., of this material.

Gold and silver occur in limited quantities in Alaska. The latter is sometimes associated with native copper.

Talcose and chloritic slate, with veins of quartz, abound in the island of Kadiák. An analysis of specimens of these rocks by Dr. Newberry shows only about $1 per ton in gold and silver. He says in regard to them, however: "These specimens come from a system which at other points is probably much richer. The mineralogical character of the specimens is precisely that of the most productive gold-bearing veins known, although silver will not be found in quantity in such an association of minerals."

* Newberry, Report on Alaska Minerals to the Smithsonian Institution.

It is not impossible that the gold-bearing alluvium of Cook's Inlet, first examined by Doróshin, was originally derived from similar rocks, especially as the island of Kadiák is apparently a prolongation of the peninsula of Kenái, on which the gold-bearing alluvial was found.

Another analysis of this quartz, by Dr. John Hewston, Jr., afforded $4.15 in silver per two thousand pounds, with a trace of gold. These specimens were associated with sulphurets of lead and iron.

The gold deposits of the Stikíne River are all situated in British territory. They are only worked in the placers, but gold is said to exist in quartz veins in the vicinity. The head-waters of the Táhco River have afforded coarse gold to the few enterprising miners who have penetrated there. Gold in small quantities is found in the sands of the Yukon, near Fort Yukon. The alluvium of the Káknu River is a yellowish clay, and has not yet been worked by any practical miners.

Gold has been found in the bay on which the Taku villages are situated, and in the streams of the vicinity. It averages five cents to the pan in scales or small nuggets. The richest deposit was on the main stream, four or five miles from the bay, at the foot of a waterfall, said to be one hundred feet high. The Indians here were "Kakes," and said to be unfriendly. (Alaska Times, September 25, 1869.)

Native copper, occasionally associated with silver, has long been obtained from the natives of the Átna or Copper River. It occurs in rounded masses sometimes weighing thirty-six pounds. The original locality is unknown and carefully concealed by the natives, with whom it is an article of trade. The specimens have a worn appearance, as if from the bed of a stream. That this metal exists in large quantities in this vicinity, there can be no doubt. Metallic copper is reported from Unaláshka by Veniamínoff, and has been obtained from the north end of Admiralty Island and from Únga Island by the Russians. The blue carbonate occurs on the Kuskoqúim and near Cape Románzoff, and the sulphurets on the north coast of Aliáska. Mercury, in the form of cinnabar, exists in the Cretaceous strata of the Alexander Archipelago. The locality is unknown, but fine specimens were in the possession of the Russians.

Lead, in the shape of galena, is reported from Whale Bay, about twenty miles south of Sitka, and near St. Paul's, Kadiák. It has been found only in small quantities.

Iron exists in many parts of the territory, but no valuable deposits, fit for working, have yet been noticed. The titanic and magnetic oxides, in the form of sand, have been reported from the island of St. Paul. The micaceous oxide is used as a pigment by the Yukon Indians. A red ferruginous clay is used by the same tribes in decorating all wooden articles.

Graphite, or plumbago, is reported from Kadiák, Séguam, Kachídaguk Point, Aliáska, and by La Perouse from Litúya Bay.

Black oxide of manganese has been received from the Kuskoqúim.

Next to copper and coal, sulphur is probably the most valuable mineral of the territory. It has long been in use as a means of obtaining fire by the coast tribes, and is reported, with great probability, to exist in large quantities in connection with the numerous volcanic peaks and craters of Alaska. It has been reported as existing in solution in most of the hot and mineral springs elsewhere referred to, and in a solid form in the following localities: near the craters of the Aliáska volcanoes, on the island of Kadiák (?); in the fissures of Shisháldin on Únimak, and in large quantities near Pogrúmnoi Village on the same island; in a small crater on Akután; in quantities on a small island southeast of Akhún, near the summit of Mákushin volcano; in the mud craters of Átka; and finally on the volcanic peaks of Kánaga.

In case of war, when the supply of Sicilian sulphur might be cut off, or for the manufacture of blasting-powder for the miners of California, these deposits may prove of very considerable value. The waters of a small lake on Beaver Island, of the Príbyloff group, are said by Veniamínoff to be strongly impregnated with another ingredient of gunpowder, namely, nitre.

Kaolin occurs on Amchítka, but the amount and exact locality are not recorded.

Boulder Island produces, according to Grewingk, "earthcream (!), or edible earth, consisting of pure gypsum without infusoria." This statement needs explanation.

Upon Úmnak a good quality of fire-clay is found near Yagór-

koffski Village. The exploration of the mineral wealth of Alaska has hardly begun.

In regard to precious stones we have very little information. Amethysts are not uncommon in veins of quartz. Zeolites are abundant in the amygdaloid rocks of the Lower Yukon. Tourmalines and garnets are reported from Kotzebue Sound. Garnets are abundant near Fort Simpson, in mica schists. Spinel occurs in a bed of whitish decomposed volcanic rock on St. George's Island. The crystals are large, but usually dark and full of imperfections. Agates and carnelians are abundant in numerous localities, especially Únga and the valley of the Lower Yukon. Diamonds have erroneously been reported from Únga.

Among Indian carvings I have seen several made of beautifully variegated marble, with streaks of red, black, and cream-color. Hypochlorite, a rich green ore of bismuth, with delicate streaks of different shades, is commonly used for ornaments by the natives of the coast from Bering Strait to Sitka. It somewhat resembles jade in appearance, and has been referred to as malachite by ignorant explorers.

Wild and exaggerated stories have found a place, even in official documents, in regard to fossil ivory. This is not uncommon in many parts of the valleys of the Yukon and Kuskoqúim. It is usually found on the surface, not buried as in Siberia, and all that I have seen has been so much injured by the weather that it was of little commercial value. It is usually blackened, split, and so fragile as to break readily in pieces. A lake near Nushergák, the Inglutálik River, and the Kótlo River, are noted localities for this ivory. It has also been found on the shores of Kotzebue Sound and the Arctic coast.

Ice has long been an article of trade with the Russian American Company. The history of this trade is given elsewhere. The first cargo was sold for $75 a ton. It was soon found that it was impossible to procure ice of good quality or in sufficient quantities in the latitude of Sitka. The establishments were therefore removed to a small island near Kadiák, where they still remain. At various times vessels have loaded with ice from several of the glaciers to the southward. The value of the ice imported into California in 1868 was $28,000. The demand for it has not greatly increased of late years, yet it seems as if, when once in-

troduced into Mexican, South American, and Asiatic ports, that a profitable trade might be carried on. At present ice is taken from New England to India and China, a much greater distance, requiring a longer voyage through hot latitudes, and of course necessitating a large waste while on the way.

Our knowledge of the geology, minerals, and rocks of Alaska is extremely meagre. It is to be hoped that our energetic traders and trappers will enable us to increase it by collecting and transmitting specimens from clearly identified localities. In this way our stock of information may be rapidly enlarged, and the growth and prosperity of the new Territory promoted.

CHAPTER VI.

Fisheries, Fur Trade, and other Resources not previously mentioned.

EXTENSIVE fisheries have always been considered by all nations as among the most productive sources of wealth and prosperity.

The annual value of the British fisheries is estimated at twenty-five millions of dollars. Those of the French produce three millions, and the catch of American vessels on the northeast coast has an annual value of two millions.

The abundance of fish on the shores of Alaska has been a matter of wonder since the voyages of the earliest navigators. Billings, Cook, La Perouse, Lütké, Lisiánsky, Belcher, and Sir George Simpson, have all borne credible witness to the myriads of cod, salmon, halibut, and herring, which are found on the northwest coast. Fish have always formed the largest part of the food of the native population, and while the fisheries, from a commercial point of view, are still in their infancy, yet there can be no question as to their immense value and extent.

The principal marine fish of the Alaskan waters are cod, halibut, herring, tomcod, úlikon, and mullet.

The cod are the most abundant and valuable of these fish. They are found principally on soundings of about fifty to twenty-five fathoms. The most northern point reached by the cod is determined by the floating ice line of Bering Sea. This passes between the St. Matthew and Príbyloff groups of islands and touches the mainland in the vicinity of the mouth of the Kuskoqúim River. North of it there are no cod. They extend southward to the vicinity of the Straits of Fuca, but are most abundant from Yákutat Bay north, and west among the islands of the Kadiák and Aleutian Archipelagoes. The cod-banks are generally in the vicinity of land, but off-shore banks have been found, though the fishermen endeavor to keep the locality of any such

discovery to themselves. The fisheries extend clear across the Pacific, and abundance of cod are found in the Ochótsk Sea. In searching for cod-banks, fishermen may generally take the trend of the adjacent land or groups of islands, and the banks, if any, will probably be found in the line of that trend or in lines parallel with it. The known banks are of greater extent than those of Newfoundland. The best, as far as known, are near the Shúmagin Islands.

The best Ochótsk banks are near Sakhálin Island, or on the west coast of Kamchatka. The round voyage to the Ochótsk averages 170 days. That to the Shúmagins is usually about 110 days, a saving of two months, and 2,000 miles in favor of the latter, to say nothing of the safe harbors close at hand and the greater facilities for obtaining fresh provisions, wood, and water.

The importation of Atlantic cod into the markets of San Francisco averaged about 500 tons in 1863 and 1864.

The product of the Californian fishermen hitherto has been as follows: —

1	vessel,	1864,	120	tons,	or	40,000 fish.
?	"	1865,	523	"	"	249,000 "
18	"	1866,	1,614	"	"	706,200 "
23	"	1867,	2,164	"	"	947,264 "

The immense catch of 1867, of which more than one half was from the vicinity of the Shúmagins, temporarily overstocked the market, and in the spring of 1868 only twelve vessels were engaged in the fisheries against twenty-three the previous year. In the quarter ending December 31, 1868, eight vessels of 2,442 tons, employing 237 men, were engaged in the fisheries. It is much to be regretted that since the purchase of the territory no record of imports of this kind has been kept, as they came under the head of coastwise trade. This has rendered it impossible to obtain full statistics of the fisheries.* For the quarter ending June 30, 1868, 470 cwt. and 17 bbls. of fish, were exported from San Francisco to New York. The value of cod obtained from foreign waters during the same period was $ 119,127, which

* The catch for the autumn of 1869 is just reported as one million and eighty-two thousand fish. This, at the low average of three pounds and a half each, would be worth, at five cents a pound, $ 189,350 in gold.

shows abundant room for the extension of the fisheries in American waters. The total amount of fish from foreign waters imported into the United States during the eight months ending August 31, 1867, was 994,988 lbs., and for the same period in 1868, 927,540 lbs.

There appear to be two kinds of cod in the Pacific fisheries, both of which are distinct species from the Atlantic cod. As a rule, the heads are larger in proportion to the bodies than in the latter. The first of the two kinds referred to is small, but of good quality, and appears to frequent the banks during the entire year. The other and larger species arrives on the banks about May 10th, and leaves them about September 10th. These are a little smaller than the Ochótsk fish, but dry heavier, averaging about four pounds. The Shúmagin fish are the best in quality, and most of the Californian fishermen have abandoned the Ochótsk for these fisheries.

No tongues and sounds, and but little cod liver oil, has been saved by these fishermen as yet. Ten thousand gallons of oil were reported in 1866. The Shúmagin fishermen, according to Mr. Davidson, from whose report many of the above facts were obtained, are in the habit of running into Coal Harbor Saturday night, and remaining there during Sunday.

The supply of bait has been sometimes taken from San Francisco, at a cost of about $100 for a one-hundred-ton vessel. Others have relied on halibut and sculpins. There are many places near the banks where the dredge would bring up abundance of shell-fish excellent for bait. This is the case in the shallow part of Coal Harbor, and in the harbor of St. Paul's, Kadiák. Herring and other small fish in their season might be obtained in immense quantities at slight expense for the same purpose.

The prices of salt codfish of first quality, in San Francisco, have ranged from thirteen cents to seven and a half in gold, per pound. It is not probable that they will continue so high. These fishermen, like other Californians, are in haste to make money, and if it does not come in as fast as they wish, are apt to disparage the fisheries. They are not content with the small and steady gains which satisfy Eastern fishermen. I saw recently in the telegraphic column of a newspaper the following item. "San Francisco. Arrived, schr. ——— with 35,000 codfish, and discouraging reports of the fisheries"! Prudence and care are not extensively

consulted in business on the West Coast, and great expectations are the rule.

Cod have been taken at Nootka, Sitka, Litúya Bay, Yákutat Bay, Chugách Gulf, Cook's Inlet, through the whole Aleutian chain, Bristol Bay, and the Príbyloff Islands. In 1865 and 1866 the Western Union Telegraph vessels obtained abundance of fine cod in Coal Harbor, Únga Island, and off Únimak, in August.

The weather on the fishing banks from June to the middle of August is rainy and foggy, with southeast winds. From that time until the latter part of September northwest winds and fine weather are usual. Later in the season heavy southerly gales occur.

The halibut are smaller than those of the Eastern fisheries, but near Sitka and along the coast they have been taken from three to five hundred pounds in weight. They are not found north of the ice line in Bering Sea, except, perhaps, in summer.

The herring, which resemble those of the North Sea of Europe, arrive in incalculable numbers in June on the shores of Bering Sea, as far north as the Straits. The fishery lasts but a fortnight, and is over by the 15th of June. They are caught in seines by the natives, and kept until half putrid, especially in Kamchatka, when they are reckoned a delicacy. They are also found at Sitka and along the southern coast, but I have not been able to find out at what season they arrive. They are caught in immense numbers by the Indians, who have only a lath with three nails driven through it and sharpened. With these they beat the water, which is so full of fish, during their season, that it is rare not to see a herring on every nail. They fill their canoes easily in less than an hour. Their method of fishing for cod and halibut is mentioned elsewhere.

The "mullet" is not known to me, but Seemann mentions it as replacing the salmon north of Kotzebue Sound along the coast.

The tomcod or *waúkhni* of the natives is a permanent resident of the more northern coasts. It is more plenty in the fall than at other seasons. It is caught with an ivory hook without bait or barb, especially just as the ice begins to form along shore, in Norton Sound. Boat-loads are obtained, as they bite at the white ivory hook as fast as they can be pulled up. I saw immense quantities of them in Avátcha Bay. They would be well suited for bait.

The úlikon has long been the subject of remark from those who have visited the part of the coast where it abounds. It is a small silvery fish, averaging about fourteen inches long, and resembling a smelt in general appearance. The most important of the native fisheries is on the Nasse River in British Columbia. The spot is named *Kit-lák-a-laks*, and there was a mission situated there. Many tribes come to these fisheries, which begin about the 20th or 25th of March. The first fish is addressed as a chief, with appropriate ceremonies. After these are over, the fishing goes on for a fortnight or three weeks. The fish are caught in a sort of basket made of wicker-work. They are the fattest of all known fish, and afford a superior oil when tried out. The amount of fat is so great that it is impossible to keep them in alcohol for scientific examination.

Dried, they serve as torches; when a light is needed, the tail is touched to the fire, and they will burn with a bright light for some time. No description can give an adequate idea of their numbers when ascending the river; the water is literally alive with them, and appears as if boiling. Wild animals draw from the stream with their paws sufficient for all their needs. I have not heard that these fisheries have been utilized, except by the natives.

The fresh-water fish of Alaska are principally salmon, whitefish, losh, or burbot, pike, and suckers.

The salmon are of many species. Those best suited for food are called by the Russians *chowíchee* (*Salmo orientalis?*), *korbúska* (*Salmo proteus?*), and *góltsch* (*Salmo alpinus?*). On the Yukon the redfish (*Salmo sanguineus?*) is also a favorite. Other kinds, with large heads and many bones (*S. dermatinus* and *consuctus*), are dried for the use of the dogs. The number of salmon annually consumed by the natives of Alaska cannot be less than twelve million, at the lowest estimate. At the single Russian fishery near Deep Lake, Baránoff Island, 84,159 fish were obtained during the season, of which two thirds were salted. At the fisheries on Kadiák and Cook's Inlet, 465,000 salmon were caught annually. Among the articles sent by Baránoff to the Sandwich Islands were 4,344 casks of salted salmon, which realized the sum of 93,161 R. s. At the mouth of the Yukon not less than two million salmon are dried every summer, and probably double that

number. Words fail to describe their abundance. The weak and injured fish, which die after spawning, I have seen piled three or four deep in winrows, on the banks of the Unalaklík River, in the middle of October. The fishing on the Yukon begins in June, and, except near the sea, is over by the middle of September. Farther up the season is still more limited ; at Nuklukahyét it lasts not more than two months. Above Anvík their abundance is not so noticeable. The sloughs of the Yukon-mouth and the smaller rivers, which empty into Bering Sea, have proportionately more fish in them. The chowíchee of the Yukon is the king of salmon. Laid in a little water, to prevent burning at first, a slice of this fish will more than cover itself in the pan with its own fat. A number of barrels were annually sent from St. Michael's to the governor at Sitka, and by him even to St. Petersburg, as a rare delicacy. None of the more southern salmon can compare with it in flavor. It is particularly plenty on the Kúsilvak, and the largest, weighing sixty pounds, can be bought for a single leaf of Circassian tobacco. A Russian established a fishery in Kazarn Bay during the season of 1868. From the 1st of July to the end of August he put up two hundred barrels a week, and could have trebled it had he been supplied with casks and salt in sufficient quantity.

Examples might be indefinitely multiplied, but sufficient has been said to give an idea of the value, extent, and importance of this branch of the fisheries.

There are no salmon north of the Buckland River, Kotzebue Sound, but they are replaced by the "mullet," according to Dr. Seemann.

The whitefish (*Coregoni*), especially in the north, are nearly as abundant as the salmon, but with one exception they are much smaller.

The *nélima* of the Russians is found four feet long, and of delicious flavor. In the Yukon there are eight species of whitefish. These fish are in many respects superior to the salmon, as many who have tasted the Lake Superior whitefish, in perfection, will admit. They are more difficult to preserve, however, the skin and flesh being very tender and delicate. In the Yukon Valley they usually form the chief reliance of the traders in winter, when there are no salmon. They possess one virtue,— that of not cloying by long use, as salmon always does.

The losh, eelpout, or burbot (*Lota maculata*), is also abundant in all the northern rivers. They grow to a very large size, — some I have seen were five feet long, — and form an acceptable dish in the absence of whitefish. Their flesh is hard and white, and their chief value is for the liver. This, when broiled, is an exceedingly rich and delicate morsel, and affords a rich sweet oil, used by the Russians for cooking. The liver of a large losh will produce nearly a pint of oil, which perhaps would form an acceptable substitute for cod-liver oil. They are very abundant, especially in the autumn, and are an exclusively fresh-water fish. The skin is dried and used in trimming their dresses by the Innuit, and serves for windows in Eastern Siberia. The pike (*Esox estor*) abounds in all the ponds and lakes. The flesh is dry and inferior to that of the other fish. The roe and heads of the Yukon suckers (*Catostomi*) afford a rich soup, and the same is true of the spawn of the losh.

Shell-fish (except oysters), crabs, and mussels, can be obtained almost everywhere north of Dixon's Entrance, and form a large part of the food of the natives.

Turning from these, we find other sources of wealth, also known as fisheries. The pursuit of the whale, seal, and walrus has always formed a large part of the commerce of the United States and Great Britain. The right-whale fishery of the North Atlantic, carried on by hundreds of vessels of all nations, is annually becoming less profitable. For some years the larger part of the right-whale and bowhead oil and bone has been obtained from the North Pacific.

In 1848, the ship Superior, Captain Roys, passed through Bering Strait, and this, the first effort of the kind, was rewarded by a full cargo in a very short space of time. The report spread, and in the following season the example of Captain Roys was followed by one hundred and fifty-four American whalers.

The products of the American whale fishery for the quarter ending June 30, 1868, were 1,483,083 gallons of oil (other than sperm) and 526,566 pounds of baleen or whalebone, of which the total value was $1,661,922. The greater part of this came from the vicinity of Bering Strait.

The ravages of the pirate Shenandoah in 1864, struck a serious blow to the American whale fisheries in this region. Neverthe-

less, the business has rallied, and at present not less than seventy American whalers visit Bering Strait, obtaining annually an average of 1,200 barrels of oil and 20,000 pounds of bone.

The whales of this vicinity are known as the bowhead, the right-whale, the sulphur-bottom, humpback, and "California gray." The first two furnish the best quality of baleen, though the short baleen of the other species has recently been made available in certain manufactures. Much oil and bone is obtained from the Eskimo whalers by barter. The Russian American Company obtained a large amount of baleen in this way every year.

Previously American whalers were debarred from refitting in the ports of Alaska, except in cases of the utmost necessity. At present this difficulty has been obviated by the change of *régime*.

Whales are abundant, not only north of Bering Strait, but also all over Bering Sea, especially in the neighborhood of Bristol Bay. They are also common in the Gulf of Alaska. The *Clio borealis*, a minute mollusk which forms the principal food of the whale in the North Atlantic, is wanting in Bering Sea. Careful and repeated observations have failed to detect any such mollusk north of the Catherina Archipelago. The principal food of the whale in these waters is the so-called "brit," a reddish scum which covers the surface of the sea for miles, and is composed of minute crustaceans. The sperm whale, attracted perhaps by the abundance of cuttlefish (*Octopi*) is said to visit the Alaskan coast occasionally. Multitudes of small whales are found about the Aleutian Islands, and the hunting of the beluga or white whale in the various inlets near Norton Sound has elsewhere been described.

Mr. Davidson suggests the employment of smaller vessels, manned by Aleutians, in the whale fishery. These might be laid up in winter in some of the numerous harbors of the islands, while their cargoes might be sent south in larger ships. This would, doubtless, decrease the amount of expense, and at least deserves a trial.

Another great source of revenue now demands our attention. The fur trade of Alaska has been widely known for a century. Its history is almost a history of the country. The furs were the principal, if not the only objects which led to its exploration and

settlement. The fur trade is the only branch of industry which has been fully developed in Alaska, and all others have been forgotten in the enormous profits which have attended its successful prosecution. While still offering abundant opportunities for amassing wealth, yet it is, in some of the branches formerly most profitable, evidently on the decline. Nevertheless, it stands only second in importance to the fisheries, and, properly restricted, offers large returns, not only to individuals, but to the govern-

Fur seal.

ment. From a pecuniary point of view it is at present the most important business in the territory.

It may be divided, for convenience in discussion, into two branches. The first of these comprises the capture and preservation of the marine fur-bearing animals, and the second, of all other fur animals.

There are two species which furnish the most valuable of the furs of Alaska. These are the sea-otter* (*Enhydra marina*, Flem.)

* The sea-otter is well represented by one of Audubon's plates, and also by a very spirited drawing by Wolf, in the Proc. Zoöl. Soc. of London.

and the fur-seal (*Callorhinus ursinus*, Gray). The former is called the sea-beaver by the Russians, and the latter the sea-cat (*Kótik*); it has also been called the sea-bear by many authors, perhaps from the clumsiness of its motions, for there is no other point of resemblance. The foregoing sketch was taken from life and corrected by careful measurements. If it has a fault, it is that the bodies appear a little too thick, but they are correct by the measurements.

The sea-otter is a very large animal; the fur is soft and black, while long hairs tipped with white add to its beauty. When properly skinned the pelt is of an oval form. The tails are always cut off and sold separately. The hair in a first-class sea-otter skin should be nearly even in length all over it, and of uniform color. The length of a full-sized skin is about six feet, and its breadth nearly four feet.

The sea-otter is solitary, and almost exclusively marine in its habits. It is said to come up on solitary rocks or islets to bring forth its young. At other periods it seldom visits the land. It often sleeps on the surface of the water, floating on its back, and is said to clasp its young with one arm in an almost human way. It has black or dark brown eyes. The teeth are remarkable; those in front are not unlike those of a cat, while the grinders are rounded, bossy, and broad, suitable for crushing bones or the shells of bivalves. It is said to live principally on fish.

The manner of hunting the sea-otter is as follows. In Alaska the Aleuts or other natives are the otter-hunters. A large number of bidárkas take provisions for a day or two, and when the weather is calm, put out, often out of sight of land. When arrived on the banks most frequented by these animals the bidárkas form in a long line, the leader in the middle. They paddle softly over the water so as to make no disturbance. If an Aleut sees an otter's nose, which is usually the only part above the surface, he throws his dart and at the same time elevates his paddle perpendicularly in the air. The ends of the line dart forward, so as to encircle the animal in a cordon of bidárkas, and every one is on the watch for the second appearance of the otter. The same process is repeated until the animal, worn out with diving, lies exhausted on the surface, an easy prize for his captors. The skin belongs to the hunter who first struck it, or to him who struck

nearest the head. If two wounds are inflicted at the same distance from the nose, that on the right side has the preference. Guns are not used, as they are said to scare away the otters. The skin is stretched in a hoop, and the tail is skinned without a longitudinal incision. The sea-otter was formerly very abundant, from the Kamchatka coast along the islands as far as the coast of Lower California. A few are annually taken on the coast of Kamchatka, five or six thousand among the islands of the Catherina and Alexander archipelagoes, and a very few to the southward. Those taken by the Russian American Company were sent to Irkútsk, whence part of them were taken to St. Petersburg and part to the Chinese frontier, where, at the trading town of Kiachtá, they were sold for tea and silks.

The skins of the sea-otter were formerly worth in Europe from two to five hundred dollars, but they have much declined in value. At present the best quality bring only from eighty to one hundred dollars. The Aleuts receive for first-class skins about twenty dollars in gold or goods.

Owing to the peculiar manner in which the sea-otter is hunted, it would be difficult, if not impossible, to place any restrictions on the trade. They form a much smaller item in the list of peltries than they did once. It is a curious fact, that there has always been a large difference between the number of tails and the number of skins purchased by the Russian American Company, although the Aleuts were forced to sell all their skins to the officers appointed by the Company to receive them. The sea-otter trade was inaugurated by the sailors of Bering's second expedition, and proved so profitable that the Russians dared shipwreck, starvation, scurvy, and the hostilities of the natives, for many years in the prosecution of it.

The fur-seal fishery, formerly less important than that of the sea-otter, has of late years far exceeded it in value. A short review of the history of this fishery may not be out of place. At present fur-seal are almost exclusively obtained on the islands of St. Paul and St. George in Bering Sea. A few stragglers only are obtained on the Falkland Islands and the extreme southwest coast of South America. The case was formerly very different. Many thousands were obtained from the South Pacific Islands and the coasts of Chili and South Africa.

The Falkland Island seal (*Arctophoca Falklandica*, Peters) was at one time common in that group and the adjacent seas. The skins, worth fifteen Spanish dollars, according to Sir John Richardson, were from four to five feet long, covered with reddish down, over which stiff gray hair projected. They were hunted especially on the Falkland Islands, Terra del Fuego, New Georgia, South Shetland, and the coast of Chili. Three and a half millions of skins were taken from Masa Fuero to Canton between 1793 and 1807.

Another species (*Arctocephalus Delalandi*, Gray) formerly abounded on the coast of Africa, near the Cape of Good Hope. Their fur was the least valuable of the different kinds of fur-seal, and the species seems to have become extinct. They were smaller than the other kinds, and said to be of a reddish-brown color.

Of the Arctic or Bering Sea species (*Callorhinus ursinus*, Gray) not less than six million skins have been obtained since 1741.

Captain Benjamin Morrell, about the year 1823, found fur-seal on the Lobos, Galapagos, St. Ambrose, and St. Felix islands of the coast of Chili ; he also obtained them from Kerguelen's Land, Bouvette's Island, Staten Land, the Falklands, Tristran d'Acunha, Masa Fuero, and the Auckland Islands. He gives the following particulars in regard to their habits, which apply particularly to the Falkland species.

The seal come ashore in the month of November for the purpose of bringing forth their young, remaining until May. The old males were called "wigs" by the sealers ; the females, "clapmatches" ; those two years old, "dog-seals" ; and the very young ones, "pups." The term of gestation is ten months. The pups are born blind, and remain so for several weeks. At three or four weeks old they are taken by the mothers into the water, as a cat carries her kittens, and taught to swim. They seldom have more than one young one annually. The pups, after learning to swim, spend most of their time in the water. They are easily tamed, and Morrell had two for several months. These seal are said to live on the squid (*Loligo*), and to attain an age of thirty years. They are very active, often jumping six or eight feet out of the water, which is never done by the hair-seals. They swim with great swiftness. They will fight hard for their young and for the possession of the females, but are timid in other respects. The

young seals do not approach the females. They are polygamous, each old male having a herd of eight or ten females. Their hearing is very acute. At the end of February the pups go ashore to shed their coats. About the 1st of May all leave the land until the month of July, when they appear and disappear about the shore for some unknown reason. About September, first the young seal, and afterward the old ones, repair to the land as before. Large males reach seven feet in length, and females about five feet.

The fur-seals and sea-lions are closely allied, forming the family *Otariidæ*. They are well distinguished from the hair-seals (*Phocidæ*) by their external ears and long flippers destitute of hair, and with only three nails. The hair-seals have no external ears, and their flippers are broad, short, and covered with hair, having five nails on the hind ones.

The Alaskan fur-seal formerly extended from the ice line of Bering Sea to the coast of Lower California. At present a few stragglers reach the Straits of Fuca, where five thousand were said to have been killed in 1868, but the great majority are confined to the Príbyloff Islands. They have never been found in Bering Strait, or within three hundred miles of it. They arrive at the islands about the middle of June, a few stragglers coming as early as the end of May. They leave on the approach of winter, usually about the end of October. They are supposed to spend the winter in the open sea south of the Aleutian Islands. The pups are born about the middle to the end of June. They are about a foot long and grow very rapidly. Each female has only one pup. These young seal are easily tamed and very playful. The bulls approach the females about a week after the young are born. The period of gestation is therefore nearly twelve months. The young seal are kept away from the females by the old bulls until they are three years old. When born the pups are covered with fine black hair without down. At the age of three months this down begins to appear, and about six months later the black hair is replaced by a stronger hair tipped with white or brown. At three months the milk-teeth are replaced by the permanent set. The eye is black and liquid and large in proportion to the size of the animal. When contracted the pupil is horizontally oval, not perpendicular, as in the

cats. They appear to feed on fish, but will remain many days on shore without food. Nothing is found in the stomach. They sleep in the water on their sides, with the upper flippers out of water, and receive the bulls in the same position. They have three cries, — a kind of roar, like that of a young calf, which indicates anger; a milder cry, which they use in calling to one another; and a kind of piping whistle when they are hot or tired. They come up in droves of many thousands on the hillsides near the shore, and literally blacken the islands with their numbers. The rocks, which they have scrambled over for ages, are polished and rounded. The ground which they frequent is avoided by the sea-lions, and is quite destitute of herbage. The vicinity has a strong and disagreeable odor. They get along rather awkwardly on land, going at a kind of gallop, both hind flippers moving together. They can ascend almost perpendicular rocks, as the skin which covers the flippers is harsh and granulated, looking like shagreen. They fight desperately among themselves, each bull having five or six females which he defends with the greatest courage, while they look on complacently, or encourage him with their cries. The female seal has four teats, but they are almost invisible except when suckling. They have a shorter tail and more reddish-brown on their bodies than the male. The latter has a mane, which is absent in the females. In the fore flippers there are no visible toes, but the hind flippers are very long and thin, with strips of skin extending several inches beyond the bones of the toes, which are connected by a web. A favorite attitude, when on land, is sitting with the head bent sideways, the mouth open and thrown up, fanning themselves meanwhile with one hind flipper. When swimming, the palms of the two latter are placed together and extend behind, performing the office of a tail. They often scratch themselves with the long nails on these members. The testes are retractile. The manner of conducting the fishery is as follows.

A number of Aleuts go along the water's edge, and, getting between the animals and the water, shout and wave their sticks. The seal are very timid, and always follow each other like sheep; yet, if brought to bay, they will fight bravely. A man who should venture into the midst of a herd would doubtless be torn in pieces, for their teeth, though small, are exceedingly sharp.

A body of four or five hundred having been separated, as above, from the main assembly, they can be driven very slowly, by two men, into the interior of the island, exactly as a shepherd would drive his sheep. Their docility depends on circumstances. If the sun is out, and the grass dry, they cannot be driven at all. If the day is wet, and the grass sufficiently moist, they may be driven several miles. Every two or three minutes they must be allowed to rest. Those who become tired are killed and skinned on the spot by the drivers, as it is of no use to attempt to drive them. They would at once attack the driver, and perhaps seriously injure him. When the seal have been brought to a suitable place, they are left with some one to watch them until it is desired to kill them. The skins of old males are so thick as to be useless. The Russians restricted the killing solely to young males, less than five years and more than one year old.

No females, pups, or old bulls were ever killed. This was a necessary provision, to prevent their extermination. The seal are killed by a blow on the back of the head with a heavy sharp-edged club. This fractures the skull, which is very thin, and lays them out stiff, instantly. The Aleut then plunges his sharp knife into the heart, and with wonderful dexterity, by a few sweeps of his long weapon, separates the skin from the blubber to which it is attached. The nose and wrists are cut around, and the ears and tail left attached to the skin. When the operation is over, the skin is of an oval shape, with four holes where the extremities protruded. These skins are then taken and laid in a large pile, with layers of salt between them. After becoming thoroughly salted, they are done up, two together, in square bundles, and tied up with twine. They are then packed for transportation to London. No guns are used in killing these seal. Indeed, guns are not only unnecessary, but injurious, for a hole in the skin diminishes its value one half. All the fur-seal skins are dressed in London. They were worth in the raw state, in 1868, about seven dollars each in gold. A machine has been invented by which the skin is shaved very thin; the roots of the stiff hairs are cut off, and they may then be brushed away. The down, which does not penetrate the skin to any distance, remains, and is dyed black or a rich brown. This is the state in which we see the skins at the furrier's.

The Aleuts were formerly paid only ten cents each for these skins, in condition for shipment, the salt being furnished; but the work of preparing them was not otherwise paid for. In 1868 they received thirty-five cents apiece, in gold or goods, under the same conditions.

At first the fur-seal were killed in immense numbers by the Russians. At one time three hundred thousand skins were destroyed, in order that the market might not be overstocked. It was only when their numbers were very greatly diminished that the number annually killed was limited, and the other previously mentioned restrictions were imposed. Of late years not more than fifty thousand fur-seal were allowed to be killed annually. Of these, five or six thousand were from the island of St. George, and the remainder from St. Paul. The price has gradually been rising, and is now higher than for many years. At one time the Russian American Company had a contract to deliver twenty thousand skins annually to a New York firm for $2.50 each. Now the skins may be estimated as worth at least five dollars each in gold in the London markets. Of this, in 1868, the poor Aleuts got only thirty-five cents. The price of the salt and the freight deducted, the rest remained for the traders. It may be said that thirty-five cents is enough for the work they do, as a skilful Aleut will skin fifty in a day. This is to some extent true, but there is a very large margin of which a reasonable proportion should go toward paying the interest of the debt incurred in the purchase of the territory. This is not only feasible, but proper and just. Familiarity with the subject is my excuse for suggesting the necessary legislation.

First, a monopoly, properly restricted, offers many advantages to the government. Those who might receive the grant should give large and satisfactory bonds, and pay a tax of not more than two dollars a skin for the annual catch of not over one hundred thousand, of which not more than twenty-five thousand should be killed on the Island of St. George. The number of the seal had greatly increased up to 1868, but in that year not less than fifty thousand were killed on St. George's, and one hundred and fifty thousand on St. Paul's, by the traders. At this rate they would soon be exterminated or driven to the Kúrile or Commander's Islands. Yet it is probable that one hundred thousand might be

safely killed. But, in case a monopoly be considered as inconsistent with the spirit of our institutions, the following restrictions should be enforced, if it is desired to preserve the fishery and obtain an income from it.

I. The killing should be entirely restricted to the Aleuts born or now residing on the Príbyloff Islands.

II. Trading companies desirous of purchasing skins from the Aleuts should be required to give good and sufficient bonds to pay their taxes to the officer appointed to receive them, to refrain from trading or giving liquor to the natives, and from violence toward them or other traders.

III. A tax of . . . . dollars a skin should be imposed (to be fixed, in the form of a stamp of lead or other suitable material, to each skin, or to be paid upon the delivery of the pelts), and collected by an officer, who should reside on the islands and supervise the killing, salting, and shipping of the skins. This officer might also serve as Indian agent, and the islands should be declared an Indian reservation. The buildings which have been illegally erected on the islands should be forfeited, and traders who infringe the regulations should forfeit not only their bonds, but their vessels and furs, and be forever debarred from receiving another license to trade.

IV. The killing should be restricted to one hundred thousand annually, of which twenty-five thousand should be taken from St. George's, and seventy-five thousand from St. Paul's.

V. American citizens only should be allowed to receive licenses, and the salary of the Government agent should be sufficient to put him above bribery. He should have an assistant on St. George's, but all other work could be done at an infinitesimal cost by the resident Aleuts. No settlements should be allowed upon the Príbyloff Islands, and the law against the sale of liquor should be most rigidly enforced.

By measures such as these, the rapacity of unscrupulous traders would be curbed, the Aleuts protected, the government remunerated, and the trade put upon a secure business foundation. The number allowed to be killed might be increased or diminished annually, as experience showed to be necessary.

The flesh of the fur-seal and sea-lion serve the Aleuts for food, and their blubber for fuel. The flesh of the fur-seal forms but a small portion of the body. The greater part is blubber, and this

is more noticeable because of the thousands of bodies of seal which are scattered over the islands. If these were composed in large part of muscular fibre, as is the case with the walrus, the decaying bodies would breed a pestilence. As it is, the odor is sufficiently perceptible, though a month or two shows the skeleton nearly clean.

The flesh of a young fur-seal, placed in running water overnight and then broiled, is far from disagreeable. In fact, it tastes almost exactly like mutton-chop. The young sea-lion is said to be even better eating, and both present a marked contrast to the fetidity of the flesh of the hair-seal (*Phoca*) of Norton Sound. The Aleuts make boot-soles, which are very durable, of the skin of the flippers. The fat cut from the nearest carcass serves them for fuel. The blubber of the fur-seal makes oil of the first quality, and is worth about two dollars a gallon; yet for many years hundreds of barrels have fertilized the hillsides, for want of some one to preserve it. Each seal will make half a gallon, which would give for one hundred thousand seal about a thousand barrels of oil, worth at least sixty thousand dollars, which has always been wasted. In fact, the oil is worth as much as the skin at the islands.

The second branch of the fur trade now demands our attention. The principal fur-bearing animals, which are not marine in their habits, are the fox, marten, mink, beaver, otter, lynx, black bear, and wolverine.* Beside these, the skins of the whistler, marmot, reindeer, mountain sheep and goat, wolf, musk-rat, and ermine, have a certain value, though hardly to be classed as furs.

The foxes are of several varieties. The stone foxes are blue, gray, and white; the red fox is found of various colors, known as silver, black, cross, and red foxes.

The white stone foxes are the most valuable of the varieties of that species at present. They are found in the more northern part of the territory, especially in the Káviak peninsula, on the Arctic coast, and near the Yukon-mouth.

The most common variety is the blue fox. It is of a slate color with a purplish tinge, and very abundant on the Príbyloff and Aleutian islands. They have been introduced upon most of the islands by the Russian American Company, and only a cer-

* These animals are mostly caught in dead-fall traps by the natives. There are no white trappers and very few steel traps in the vicinity of the Yukon.

tain number were allowed to be killed annually. The earliest voyagers found tame foxes on the larger Aleutian Islands, and it is not improbable that they were all originally introduced from the continent by the hand of man. They are very prolific, having from twelve to fourteen cubs at a birth. They have exterminated all the small animals, if any existed, on the islands, and feed on sea-birds or the carcasses of seal abandoned by the natives.

The gray stone foxes are the white ones in their summer dress, and the skins are nearly worthless. Black and silver foxes are abundant in many parts of the territory. Those from Unaláshka were formerly considered the best. Many are annually obtained at Fort Yukon. These were formerly among the most valuable of furs, but at present are not so much in favor. Fifty dollars will buy one of the best quality, while formerly they were valued as high as three hundred dollars. Cross foxes, which are much more common, are of proportional value according to the quality of the particular skin. Red foxes are found all over the northern part of America, and are very common in most parts of Alaska. The marten, known also as the stone-marten, fitch, or American sable, is very abundant in the Yukon Valley, especially in the wooded district. The mink, which prefers the more open country, is at present one of the most valuable small furs. They can be obtained near the mouth of the Yukon in great numbers, and many of them of the finest quality. The price is usually five musket-balls.

The beaver, as elsewhere described, is found in great numbers all over the northern part of Alaska; it is the standard of value among the Yukon Indians. A beaver skin is worth twenty balls or two fathoms of strung beads. Four mink, two marten, or two white foxes are equal in value to a beaver. A first-rate otter is worth three beaver, a lynx also three, a good red fox is equal to a beaver and a half. This tariff is quite different from the commercial value of the fur, but it is that by which all trade is carried on with these natives. A double-barrelled percussion gun is worth ten beaver, yet a single-barrelled flint-lock will bring twenty. These old customs cannot be overridden, although they may appear absurd. The fixed prices, at which the old trading companies have held their goods, doubtless tended to confirm the practice.

Otter and lynxes are very common on the Yukon. The wolverine is rare, and its skins, as well as those of the wolf, bring high prices from the natives, who use them for trimming their dresses. A first-rate wolverine skin will bring twenty marten or forty mink skins.

The skin of the black bear is valuable in Russia, although not much esteemed with us. The ermine is usually of poor quality, except that from the Káviak peninsula. The skins of Parry's marmot are used for párkies in the territory. They were domesticated by the Company on Chírikoff Island, and the skins were prepared by persons who were sent there as a punishment for slight offences. The hides of the deer and moose, wild sheep and goat, are, if in good condition, quite valuable. They may be obtained in immense quantities in some localities, and in others are an article of trade with the natives. Near the Yukon-mouth a deerskin is worth three martens. The muskrat have only been trapped within a few years, yet abound in immense numbers in the northern part of the territory. A black variety has a very beautiful fur, far surpassing the marten or even the best mink. An albino variety has been found on the Kuskoqúim. The *siffleur*, or whistler, is distributed over the territory, but nowhere common. Its skin is of little value except for rugs or blankets. Its Russian name is *trabagon*.

The prices paid by the Russian American Company for furs in the District of St. Michael were substantially as follows. The trade was carried on by barter entirely. To the original cost of the goods in Hamburg or St. Petersburg, from forty-two to seventy-five per cent was added for expenses. A marten was worth one paper ruble, or twenty cents. A mink was valued at ten cents; foxes, from thirty cents to five dollars; stone-foxes, ten cents; lynx, at sixty cents; beaver, at forty cents; the castoreum, at five cents a pair; otter, from forty to eighty cents; black bear, at sixty cents; and muskrats or walrus-tusks at one cent each.

But in many respects the natives did not receive even the whole value of this insignificant tariff. The goods were delivered at their appraised value to the bidárshik of a trading-post. All expenses of winter journeys, of native servants in the fort, and, in fact, everything except the cost of constructing the buildings and the wages of the Russian workmen, must come out of the trading

goods. Hence, while the Company's price of a pound of Circassian tobacco was thirty cents, and the bidárshik was expected to balance his account with the Uprovalísha of his district by returning, say, three mink for the tobacco; yet the native received nothing like a pound for three mink skins. The tobacco comes done up in small bundles called *papóoshki*. There may be from two to six of these in a pound; yet for each one, large or small, the native must give a marten skin or two mink skins. Again, the Company's price for lead was twenty cents a pound. Their bullets were about thirty-six to the pound. Yet the native only received ten balls for his marten, or five for a mink skin. In the season of 1867–68, there were collected in the District of St. Michael, by Stepánoff, sixteen thousand martens, according to the Indian mode of counting. During the same time, not less than fourteen thousand found their way to the traders at Kotzebue Sound and Grantley Harbor, and ten thousand to Fort Yukon. This makes a total of forty thousand, which may be averaged to be worth at least two dollars and a half each. In their purchase, not over twenty thousand dollars were expended, in every way. The profits of such a business are evident.

At present, competition has raised the value of the martens at St. Michael's from twenty to fifty cents each, but in the interior they are still less costly.

The furs annually purchased by the Russian American Company were disposed of in this way.

Beaver to the number of two thousand were sent to Irkútsk and then sold at Kiachtá on the Chinese frontier. The surplus over that number were sent to Shanghae for tea, and to America. The castoreum went to St. Petersburg. Otter were sent to Irkútsk and Kiachtá. Some foxes went the same way, and others to Shanghae. White stone foxes went to San Francisco, and the blue to Irkútsk. Black bearskins went to St. Petersburg. Lynxes were formerly sent to Shanghae and afterward to Irkútsk. Martens were sold in Sitka, Shanghae, and Irkútsk. Muskrats, mink, and Parry's marmot (*Ivráshka*), were sold in Sitka for use or exportation. Of the fur-seal, 20,000 went to the United States, 8,000 to Irkútsk and China, a few to Shanghae, and the greater portion to St. Petersburg. Walrus-tusks were sent to St. Petersburg, sea-otter tails to Irkútsk and China, and, finally, wolf and

wolverine skins to the District of St. Michael, where they were traded with the natives for other furs.

Since 1850, traders from the Sandwich Islands, have visited Kotzebue Sound and Grantley Harbor every spring. These traders are usually small vessels, brigs or schooners. They load at Honolulu with ammunition, double-barrelled Belgian fowling-pieces, hardware, and rum or alcohol. They follow up the melting ice, and usually reach Bering Strait in the latter part of June. Their tariff of prices amounts to about fifty cents apiece for martens, in goods. They are usually provided with whaling implements, and manned by Kanakas. A single whale will pay the expenses of the voyage, and leave the profits of the trade clear. The large quantities of liquor which are obtained in this manner by the natives have a very demoralizing effect. The chances of capture by a revenue-cutter are so small that the risk is not very great, and the profits are very large. Since the purchase of the territory, smugglers, loaded with liquor from British Columbia, have also carried on a thriving trade. It is also said that opium and Siberian sables have found their way to San Francisco, *via* Alaskan ports, without paying duty. A smart revenue-officer, with a light-draft swift-sailing cutter, could soon materially diminish this traffic. The difficulty has been, hitherto, that the vessels sent to Alaska have been so large as to be unfit for entering the shallow harbors in the northern part of the territory; and they have usually made their appearance in the north about the month of August, when the spring trade is over, and the smugglers have already returned to the Sandwich Islands with their cargoes.

The late treaty with Russia has thrown open the trade with the natives in the Ochótsk Sea and on the coasts of Siberia to American vessels for ten years. These have not unfrequently loaded with liquor, and cleared for the Siberian coast, afterwards disposing of part of their cargo in Alaskan waters. The attention of the government should also be called to the illicit trade carried on by the Hudson Bay Company at Fort Yukon, and to the fact that vessels loaded principally with liquor have cleared for a trading voyage in Alaska without opposition from the officials at Sitka. One of these visited St. Michael's in June, 1868; and another touched at St. George, leaving men and liquor, though ostensibly bound for the coast of Eastern Siberia. The

revenue-cutter passed St. George's without landing or disturbing these smugglers, who proceeded to slaughter some thirty-five thousand seal, which were afterwards shipped to the Sandwich Islands. Time, and a more thorough knowledge of the territory, will doubtless put a stop to these abuses.

A word on the organization of the territory may not be out of place. At present the number of Americans in Alaska is less than five hundred, excepting troops. These are all connected with trading companies. The great majority of the traders are foreigners. If a territorial government should be organized at present, the effect would be to throw the whole power into the hands of a few individuals, mostly foreigners, who direct these companies. The result would be that the stronger companies would use their power to crush the weaker ones, and to continue the sale of liquor, and thus defeat the intentions of the government. The military government is far better, in spite of its many defects. It is an unquestionable fact that the aborigines would sell themselves body and soul for liquor, if they could find a purchaser.

The statistics of the fur trade given, from the most trustworthy sources, in the Appendix, are, beyond question, far below the truth. The number of furs obtained in the colonies, according to the annual reports published at Sitka, is always greater than the number stated in the annual report published for the stockholders of the Russian American Company in St. Petersburg. The discrepancies cannot be reconciled, and show a great carelessness in the manner of keeping the accounts. There was a leak somewhere, and the Russian officials alone could tell where. It is probable that strict probity did not always characterize the colonial officials. Beside the amount of furs thus disposed of, the traders and the Hudson Bay Company doubtless obtained a large annual supply, which is nowhere recorded.

Sufficient has been said to show approximately the value and extent of the Alaska fur trade. It may not be superfluous to repeat that the Company paid annual taxes to the Russian Crown, which averaged two hundred thousand rubles. Other sources of revenue remain to be noticed.

The sea-lion (*Eumetopias Stelleri*, Mull.) and the walrus (*Rosmarus obesus*, Ill.) have long furnished hides, oil, and ivory to the

inhabitants of Alaska. The quantity of walrus-tusks annually obtained will average one hundred thousand pounds. These animals are most abundant near Port Möller in Bristol Bay, and on the more northern coast and islands. They feed principally upon shell-fish, which they swallow whole, and the shells, which remain after they have digested the contents, are found in large numbers about the localities which they frequent. The hide has been successfully used for belting and covering skin-boats. The oil is a well-known article of commerce. There is no doubt but that the annual supply might be largely augmented.

The sea-lions are abundant on most of the rocky islands. They appear in May and remain until late in the fall. They come ashore to breed and often remain in one spot for weeks. They appear to subsist mainly on fucoid algæ or sea-weed, and many stones are found in their stomachs. The males often weigh two or three tons. Their hide and oil are used for the same purpose as those of the walrus, though inferior in quality. The whiskers of the sea-lion are as large as a quill, and sometimes fifteen inches long. They are exported to China, the Chinese paying a high price for them to use as toothpicks. The gall is also disposed of in China, being used in the manufacture of silk.

Many casks of ducks and geese were annually salted down by the Russians. They form a very agreeable addition to the winter fare. The quantity of game of this kind in Northern Alaska is so great, that the time may come when eggs, salted birds, eider and swan's down, may occupy some space in the commerce of Alaska.

The fashion (set centuries ago by the Innuit) of wearing the beautiful skins of the grebe, loon, and diver, as furs, may open a new branch of commerce. Milliners may obtain thousands of wings and breasts of the most delicate colors and rarest beauty, from the northern marshes. From the same source, the luxurious sleepers of the west coast may fill their beds and pillows.

The immense fields of kelp, which fringe the greater portion of the northwest coast, have been the wonder of navigators from the time of the earliest voyages.

The manufacture of carbonate of soda and iodine from this fucus is a business of no little importance in the Old World. These sea-weeds are dried on the shore and carefully burned

in an oblong kiln. After the whole is burnt, the mass gradually softens, when it is stirred with an iron bar until it reaches a semifluid consistency. It is then allowed to cool, and when broken up is ready for the market. According to the *Encyclopedia Americana*, small farms in the Orkneys which formerly rented for £40 a year have now risen to £300, on account of their kelp shores; and so much importance is attached to this branch of business, that, along sandy shores, stones have been placed within the flood-mark, on which the sea-weed soon collects. Many thousand tons are thus manufactured annually, and bring from £7 to £10 per ton. The alkali is consumed in the manufacture of glass and in all hard soaps. It is from incinerated kelp that iodine is obtained in large quantities. The solution of kelp, from which all the alkali has been crystallized, by a chemical process affords iodine through distillation. This branch of manufacture might be carried on in almost any part of Alaska to any desired extent.

The resources of the new territory having now been pointed out, it only remains for the irresistible energy of American citizens to hasten their development. Time alone can prove their ultimate value.

CHAPTER VII.

Adjacent Territories and their Inhabitants.

BRITISH COLUMBIA is too well known in America to require much notice here. It is probable that the mines of coal or gold, the only wealth of that colony, extend northward into Alaska. Further exploration in the southern portion of that narrow strip of coast is necessary to determine the localities where the above-mentioned minerals crop out; but that they exist there is little doubt.

The colonies of Vancouver Island and British Columbia have been recently united under one government, with the capital at New Westminster. The costly machinery of two British colonial governments proved too heavy a burden for the slender resources of the colonists, and necessitated the change. There can be little doubt but that annexation to the United States would be hailed with joy by the majority of the inhabitants of this region, who have already taken to celebrating the Fourth of July with a heartiness not surpassed by the citizens of the United States on the adjacent shores of Puget Sound.

Victoria, V. I., formerly a thriving town of some twenty or thirty thousand inhabitants, is now comparatively depopulated. After the placer mines of British Columbia had become worked out, and quartz mills became a necessity, the population dwindled. For some time, as a free port, it invited some commerce, and was a noted base for smuggling operations. The consolidation of the two colonies, and the imposition of import duties, still more reduced its prosperity, and long lines of deserted houses stand in evidence of the fact that mineral wealth alone will never make a prosperous country. The fisheries of British Columbia have been neglected, her timber is in great part inaccessible, and she has no farming land, except in small isolated patches.

Lakes Kennicott and Ketchum, the sources of the Yukon, are

in British Columbia. The exploration of this part of the territory is mainly due to the employés of the Western Union Telegraph Company. Táhco Lake was reached in August, 1867, by Mr. Michael Byrnes, a miner, well known in Caribou. He had been temporarily employed as an explorer by the Company. The object which tempted him to leave the gold-fields of Caribou was more the hope of finding gold than the love of exploration. Unaccompanied, except by a few Indians, he made his way over hills, down narrow cañons and difficult rapids, until he lighted his pipe and built his camp-fire on the beach of Táhco Lake. In June of the same year, Ketchum and Lebarge had visited Fort Selkirk, or rather the spot, distinguished by two rubble-built chimneys, where the fort had stood before it was burnt by the Chilkáhts. One hundred and twenty miles, two days down stream, easy travel, — nay, hardly a day and a half in their swift birch canoes, and the explorations would have been finished, and he would have earned the honor of completing them. That evening a canoe with two Indians arrived in haste, with the news that the enterprise was abandoned, and Mr. Byrnes might return, as the Company would not require his services as explorer any longer; the success of the Atlantic Cable rendering the failure of this audacious but poorly executed enterprise no longer a matter of doubt.

Mr. Byrnes returned, moody and silent, refusing to converse on the subject. It is said he has returned to the wilderness, still in search of gold!

The Yukon, from Fort Selkirk to the mouth of the Porcupine River, was, I believe, first descended by Mr. Campbell of the Hudson Bay Company's service. He was in charge of Fort Selkirk, and learning from the Indians that there were no obstructions to navigation, he supposed, correctly, that it would be easier to transport their furs and supplies by the way of the Porcupine and Peel Rivers, than by the more laborious route previously employed. After the first trip this was thoroughly demonstrated, and that route was followed for several years.

One day, however, in 1851, the Chilkáhts, instigated it was said by the Russians, appeared before the fort in force. Mr. Campbell and two men who held the fort saw it was of no use to exasperate them, and, like the coon in the story, came down and

let them in. No violence was offered them, except that they were tied while the Indians plundered the storehouse. Mr. Campbell afterward said, that it made his blood boil to see the goods, brought so far at the cost of so much hard work, carried off with perfect *sang-froid* by these good-for-nothing Indians. Prudence, however, kept him quiet, and after the Indians had had their fill of plunder, they allowed him and his men to depart in peace.

After their departure the Indians amused themselves by making a bonfire of the fort, as they had previously of Pelly Banks Fort and the post at Frances's Lake. The two blackened chimneys alone were found by Messrs. Ketchum and Lebarge on their visit in 1867.

This spot is interesting to practical men as being the head of navigation, and to botanists as being the most northern point where true pines are found on the Yukon. The trees are small, but bring cones to maturity, and from them it has been determined that the tree is the *Pinus contorta* of botanists. All the so-called pines on the Yukon north of this are spruce (*A. alba*). The scenery in the vicinity of the Stikíne, Táhco, and Lewis rivers is mountainous. The mountains do not attain any very great height. Near Fort Selkirk they are moderately high, but increase in grandeur as we descend the Yukon. Toward the Alaskan boundary the river cuts its way through a high and mountainous country. The great Rocky Mountain or Chippewyan Chain, trending with the coast-line of the continent, does not, as represented on many maps, form an unbroken line to the Arctic Sea, but bends with the coast-line, and finally merges into the Alaskan Range, which forms the backbone of the peninsula of Aliáska, and farther west the chain of the Aleutian Islands.

On the river, according to Captain Ketchum, the rocks are principally metamorphic quartzites and black and gray slates. The Yukon cuts through this chain at its broadest part in the bend, about latitude 64° N. Here the river is narrow and dark, running with the greatest impetuosity, though without rapids, for many miles. The current is such that it is only a four days' trip drifting from Fort Selkirk to the mouth of the Porcupine River, in the month of July. Later, when the water is very low, it is less rapid.

Wrangell Land. — Baron Wrangell and Dr. Kyber in 1820–23 made explorations in Eastern Siberia, and received information

from the natives of high peaks visible in fine weather from Cape Yakán. In 1849, from the vicinity of Herald Island, Kellett saw high mountains, which were probably the same. On the old Russian maps land is laid down in this direction. As yet no explorers have landed upon these shores. The latest and most circumstantial account of Wrangell Land is derived from an American whaler. Captain Theodore Long, of the bark Nile, reports having seen, August 14, 1867, in lon. 180°, lat. 70° 45′, land distant about sixteen miles; along which he held his course for three days. It extended east and west apparently about three degrees of longitude. Several high peaks, one supposed to be volcanic, were observed, and the eastern and western capes were named by Captain Long respectively Cape Hawaii and Cape Thomas. There was abundance of ice between the vessel and the shore, and Captain Long did not consider himself justified in risking his vessel for the pleasure of landing on the unknown coast. The passage between it and the Siberian coast has been named Long Strait.

The reports of whalers from the Arctic Sea would seem rather to point against the probability of an open Polar Sea as understood by Kane and Wrangell. While warm currents passing northward through Bering and Davis Straits would doubtless tend to keep open, even in winter, large sheets of water (such as exist, during the most extreme cold of winter, in the more rapid portions of the Yukon River), still it seems improbable that any very extensive portion should remain permanently free from ice; obstructed, as is the case with much of the Polar Sea, with islands and shoals, each gathering its girdle of ice about it. That portion of the Arctic Ocean north of Bering Strait has hitherto been unduly neglected. It offers many inducements for more thorough exploration.

In June, 1647, Michael Stádukin, a Cossack, was sent from Nijni Kolymsk to discover an island, or land separated from the continent, which was reported as being visited by the Chúkchees, with reindeer in winter, over the ice. He returned unsuccessful. This reported land may have been Wrangell Land, but was more probably the small islands off the mouth of the Kolýma River; still, if the latter was the case, it seems singular that he did not reach them without difficulty.

There are traditions among the Chúkchees of implements of wood and bone washed ashore on the northern coast, of a fashion differing from those of Chúkchee manufacture, and from those made by the Innuit to the eastward, with whom they are well acquainted.

There are also stories told how years ago, yet in the memory of Chúkchees now living, one very cold winter, strange men, speaking a different language from Chúkchee, Innuit, or Russian, came from the north over the ice, landed on the Siberian shore, took many of the Chúkchee reindeer, and went back, no one knew whither. A few years later the incursion was repeated, the Chúkchees rallied to protect their property, a bloody fight ensued, many Chúkchees were killed, and the strangers retreated to the northward, and have never since been seen.

This legend may be due to the aboriginal imagination, or it may be founded on a fact; I give it as it was told; future explorers may find confirmation, or determine its mythical nature.

The Chúkchee Peninsula. — That portion of Eastern Siberia which is known under this name is situated east of the valley of the Anádyr River, Chaun Bay, and Anádyr Bay. It has never been thoroughly explored, and is a desolate waste of tundra and low mountains, with small trees along the Anádyr River, and elsewhere only the moss and grass on which the reindeer feed. The argali, or mountain sheep, is said to exist in the mountains, while immense herds of wild reindeer roam over the tundri.

This peninsula, forming the western boundary of Bering Strait, and part of Bering Sea, is of interest from its near approach to our territory.

The coast, from Cape Sérdze Kámen (Heart of Stone) to East Cape, and thence to Cape Bering in Anádyr Gulf, is generally high and rocky. Granitic hills rise sharply from the water, covered with keen-edged fragments detached by the frost, and broken by the same agency to the size of a man's fist and upwards. Snow may always be found somewhere on them, if not on the summits, at least in some of the sheltered fissures of the mountain-sides.

There are no watercourses, as water filters through the immense masses of broken stone, far below the surface; and is only to be obtained near the base of the hills.

Had Eugene Sue ever visited these shores, he would not have described the stunted birch-trees sighing in the wind, while the Wandering Jew and his partner in misfortune conversed with each other across Bering Strait! That forty-mile-wide expanse of blue water never reflected the stem of a growing tree as large as a lead-pencil. Richly colored mosses and lichens adorn the ungrateful rocks. Grass, chickweed, and creeping willow are found sparingly in the most favored localities and fertile gravel. A tasteless, seedy, heather berry is the only fruit, if indeed it deserves the name. A more forbidding, desolate, and cheerless shore does not exist.

Wandering Jews are not unknown here, by the way; but they appear to have degenerated from the ancient stock, and have a sharp eye for business; buying of the greasy Túski their stores of whalebone, oil, and walrus-tusks, and making them happy with tobacco, powder and ball, guns, knives, kettles, and the vilest of alcoholic concoctions.

Notwithstanding the rock-bound aspect of the coast, it abounds with good harbors, where the whalers and traders resort for water, rest, and that delectable occupation known to the initiated as "*gamming*." For the benefit of those who have not been aboard of a whaler, I will remark that the English for the above-mentioned term is "making calls."

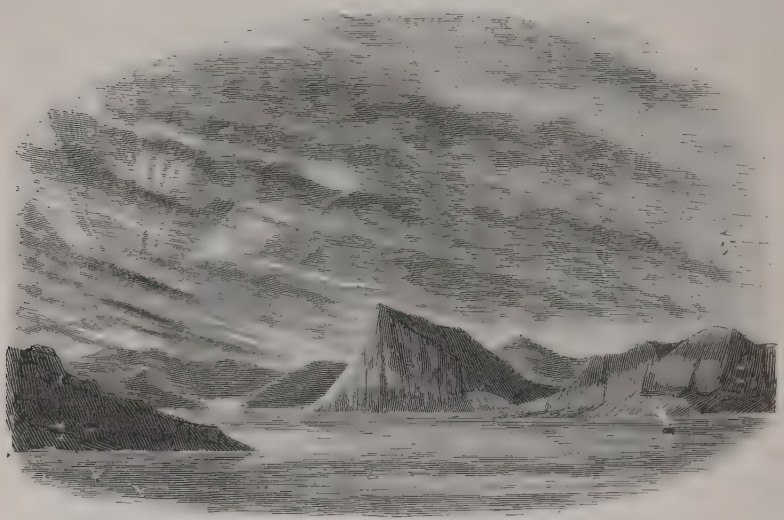
The best of these harbors, or, rather, a series of harbors, one within another, is known to the whalers as Plover Bay. The Plover wintered here in 1848–49, hence the name. It is often marked on the charts Port Providence, which I believe was the name given to it by Captain Moore.

The point to the eastward of the mouth of the bay, as it is rather low, bare, and round, goes by the name of Bald Head; somewhat farther east is the cape known to the Russians as Chukótski Nose.

Just inside of the heads a sandspit makes out, forming the lower anchorage behind it. Several smaller bays diverge from the main one, among the rest Emma Harbor, named so by Moore, whose vessel lay there during one winter. Notwithstanding the long detention here of regular exploring ships, the charts of the bay have hitherto been exceedingly erroneous. A new chart, due to the officers of the Western Union Telegraph Expedition, and recently published by the United States Coast Survey, gives

a fair view of the harbor for the first time. As a haven of refuge for whalers, traders, and other vessels in these waters, its value cannot be estimated. There is abundance of excellent water, ballast by the million tons, all ready for shipping. Fish, and occasionally tame reindeer meat, can be obtained from the native settlement on the sandspit, where several of them speak fair English. Excellent anti-scorbutic grass can also be procured in plenty near the beach.

The middle of the bay is very deep, one hundred and two fathoms, without bottom, being reported. The lower anchorage



Mount Kennicott, Plover Bay.

has rather deep water, except close in; and in a norther a large vessel would need plenty of chain and good anchors, as the bottom is hard in some spots, and there is a slight liability to drag. The small bays farther in, however, are perfectly protected, and have the best of holding-ground. The end of the sandspit in the lower harbor is in lat. 64° 22′ 25″, and lon. 173° 30′ 32″, according to the report of the United States Eclipse Expedition under Professor Asaph Hall, in 1869.

The mountains around the bay, though steep and rugged, are low. I measured several with a mercurial barometer, and named the highest and most prominent Mount Kennicott, after that

intrepid explorer, who even then, unknown to us, had passed away from his labors. The exact height of this mountain is 2,216 feet. Danger Peak, just north of Snug Harbor, in the upper end of the bay, was 2,100 feet, and 1,800 feet may be taken as a fair average of these peaks, which might be called the Chúkchee Hills.

The inhabitants of the peninsula are of two races, — the Chúkchees proper and the Túski, a branch of the Innuit stock, who have been elsewhere described.

The Chúkchees and Koriáks. — The extreme western limit of these wandering tribes may be described as a line drawn from Gíjiga to Níjni Kolýmsk on the Kolýma River. Their southern boundary is about the fifty-sixth degree of latitude. The two tribes of similar stock and habits may be considered together. The Koriáks never go north of the Anádyr River, while bands of Chúkchees may occasionally be found to the south of it. Both are distinguished by physical characteristics from the Tungúses and other adjacent tribes. The Chúkchees are a fierce and determined people, and have successfully resisted all the efforts of the Russians to impose tribute upon them, while the Koriáks have abjectly submitted without any resistance. The features of the former are prominent, their hair is black and harsh, and their eyes are large and dark. Their complexion is light yellow. The Chúkchees call themselves *Tsutsín*, from which the word Chúkchee, with its various modes of spelling, is evidently derived. They live during the entire year in round lodges covered with deerskins. These lodges are divided into compartments, called in Russian *pológs*. They are accustomed to sleep without clothing. Their párkies are of deerskin, with the edge trimmed with the skins of beaver or otter, and the hood ornamented with the skin of the dog's tail. Men and women wear ear-rings, and practise tattooing. The men adopt the tonsure, while the women do up their hair in two braids, which fall nearly over the eyes; the remainder is left in a tangled and unkempt condition. They eradicate the beard as far as possible, but wear a light mustache. The bodies of the dead are burned after cutting open the breast, while a dog or deer is sacrificed during the ceremony. Each head of a family performs the office of a shamán. Auguries are drawn, while killing animals, from the manner and direction in

which they fall. They are said to make sacrifices to invisible spirits, of whom they also make figures or idols. The Koriáks are very similar in these respects. Aquiline noses are not uncommon, presenting quite a contrast to the flat faces of the Túski and other Eskimo tribes. Some of the Koriáks, like some of the Chúkchees, are sedentary. Their language is said to be harsh, but of very limited vocabulary.

Both tribes are noted for their herds of tame reindeer, upon which they depend for their subsistence. They go with their deer wherever there is forage, and their wanderings are greatly determined by its abundance or scarcity. The deer are carefully herded and always watched by men appointed for the purpose. They are obliged to exercise great care that the tame deer shall not find opportunity to stampede with the immense herds of wild deer which sweep across the country in the spring. The domesticated animals are piebald, and sometimes even pure white. Their skins are soft and of great beauty, far surpassing those of the wild deer. The Chúkchees tan them with the inner bark of the willow, and thus color them of a beautiful red brown.

They are indefatigable traders. They exchange their deerskins and articles obtained from the Russians for oil, ivory, walrus-skins, and whalebone with the Túski. The latter (not the Chúkchees, as stated by Hartwig) cross Bering Strait and trade with the Innuit, and at Plover Bay with the American traders. The Chúkchees obtain some American goods from the Túski, but the major portion of their tobacco, calico, &c., is purchased at a fair held on an island in the Ánui River every year. This is called the Island Fair (*Óstrovnoi*). It is held in the spring, and attended by hundreds of nomads of other tribes. It is superintended by a government agent, who collects a small market-tax for the Crown.

The Russians celebrate a mass after all preliminaries have been arranged, and the hoisting of a flag on the tower of the Óstrog announces the opening of the market. At this sign, the Chúkchees, armed with spears, bows, and arrows, advance, and form a wide semicircle around the fort. At the tolling of a bell the barter commences. The furs sold by the natives are foxes, lynxes, wolverine, otter, beaver, and American martens. They also sell mahout, walrus ivory, bone sledge-runners, bearskins, and deer-

skin clothing. The Russian traders bring kettles, knives, and other iron ware, calicoes, and especially Circassian tobacco. During the fair, foot-races, dances, and other festivities, are indulged in by the natives. The Chúkchees are fond of all athletic sports, and despise a weak, small, or deformed person. Of this, Saur, who was a little man, gives a comical account in his description of Billings' journey. The Chúkchees handled him so roughly, on his first visit to them near St. Laurence Bay, that he retired in offended dignity to the ship, where he remained until the journey began, overland to the Kolýma.

The Chúkchees are said to kill all deformed children and aged or infirm people, and human sacrifices are not unknown among them. They carry their tents or *namets* with them wherever they go, and sometimes travel in caravans of fifty or sixty families. They are exceedingly fond of tobacco, and liquor which is obtained from the traders on the coast. They are said to number twenty thousand, and the Túski ten thousand, yet this is probably an exaggeration. The Koriáks are estimated at about four thousand five hundred souls. They are said by Muller to have lived in huts elevated on four posts above the ground, entering by means of a ladder from below.

Kamchátka. — This peninsula divides the waters of the Ochótsk Sea from those of Bering Sea. The climate is colder than that of the opposite shores of the latter, which is partly due to a cold current which, at least during a part of the year, flows southward from the Strait along the coast. It is noted for the number, height, and grandeur of its volcanoes. Their rugged sides are covered with a luxuriant vegetation. Along the banks of the numerous streams, a dense forest is sustained, while the meadows which occur among the valleys are remarkable for the vigor and richness of their herbage. The pasture-grounds are so luxuriant that grass is often cut three times during the season. The woods abound with squirrels and the most valuable sables. On the mountains, bears, wolves, argali, reindeer, and stone foxes are found. Fish, especially salmon and herring, abound in incredible numbers. In a small cove of the Bay of Avátcha, two white men, with the help of a few women, prepared six hundred barrels of salmon for shipment in the season of 1865. The dogs, which are used for draught, are fed solely on dry fish, and their daily

ration is a single salmon. When in good condition they will travel on good roads from sixty to one hundred miles in a day. There are two kinds of sledges in use, of which one is long and low, used only for carrying goods or on long journeys, while the other is high, shaped much like a child's rocking-horse, and is used for short journeys. The dogs are guided by the driver's voice, aided by a crooked stick called an "ostle," which he throws at them, and which requires much dexterity to pick up when travelling rapidly. Five dogs will carry three persons and sixty pounds of luggage on a large sled. The principal rivers of Kamchatka are the *Bolshóya*, the *Avátcha*, and the *Kamchátka*. There are sixty-three volcanoes, of which twenty are active. Warm and mineral springs are not uncommon. The mineral wealth of the peninsula has not been investigated. The principal harbors are those of Lower Kamchatka at the mouth of the river of the same name, and Petropávlovsk on Niakína Cove, Avátcha Bay. The latter is a most magnificent haven, which might contain the navies of the world. It is subject, however, to small whirlwinds, or "woolys," which sometimes render navigation in small boats dangerous. Petropávlovsk is the capital of Kamchatka, and is a town of some five hundred inhabitants. It is principally noted as a rendezvous for traders and for the defeat of the Allies in 1854. When there was a garrison here, the population numbered fifteen hundred, but the removal of the troops to the mouth of the Amoor River in 1855 was a serious blow to its prosperity. There are only some two hundred Russians in the peninsula. The remainder of the inhabitants are Kamshadáles, Yakúts, and half-breeds. To the north the Tungúsi or Lamúts occupy a large extent of territory with their herds of deer. At the mouth of the Avátcha River is a small settlement, which I visited in 1865. Here are numerous herds of small cattle, which give abundance of rich milk. Potatoes are raised, though not of very large size, yet in considerable quantities. These, with a little barley, turnips, lettuce, &c., compose the agricultural products. Berries are abundant. Many ducks were seen in the Avátcha delta, and auks, divers, and murres abound on the rocky cliffs of the coast. The Kamshadáles are expert in procuring their eggs by suspending themselves over the precipice and drawing themselves in by means of a crooked pole.

The Kamchatkan lily (*Fritillaria sarrana*), or Sarrána, has a tuberous root, which is an article of diet with the natives. A species of fungus called *muchamor* affords a kind of stimulant, and is also an article of trade with the more northern tribes. The roots of the wild parsnip (*Archangelica*) are distilled, and a kind of spirit made from them. The population of the peninsula is about seven thousand.

The Kamshadáles. — The original inhabitants of the peninsula are much reduced in numbers since the Russian conquest. Violence, disease, and the presence of a superior race, have swept them away in large numbers. Their characters are much changed by contact with the Russians. Those in the vicinity of Penjinsk have preserved their language with the least corruption of any. The name Kamchátka is derived, according to some authors, from the Chúkchee "*Krê-kamchatkan*," meaning demons.

The Kamshadáles are broad and stout, but of medium height. They have prominent cheek-bones, broad and projecting jaws, small noses, full lips, and black hair. Their complexion is light yellowish, with much color. The women are said to purify their complexion by sticking, with fish glue, gut parchment, made from the intestines of the bear, upon their faces. They also rub their cheeks with a red sea-weed in place of rouge. They are remarkably healthy, and attain a good old age. Some of the girls whom I saw were well formed, pretty, and attractive. They keep their houses very clean, and are neat about their persons. The men gain their living by fishing and trapping sables. For the latter they obtain, at Petropávlovsk, from eighteen to twenty dollars apiece in goods. The traders are frequently obliged to advance tea, sugar, flour, tobacco, and brandy to the natives in the summer, and to keep a bright lookout lest the cunning Kamshadále sell his furs, during the winter, to some one else. They pay their taxes, and obtain the above-mentioned articles, with clothing and utensils, by the product of their traps. For other food they rely on the fish and game, for few of them are sufficiently active to keep cattle or cultivate the ground. All of them are baptized, but, as usual among Greek converts, they retain many of their old superstitions. They are intelligent, good-natured, hospitable, and witty, but indolent, and not always honest. The snowshoes worn in Kamchatka are made on the Norwegian

pattern, covered with sealskin, and esteemed as very valuable. There are a few horses at Petropávlovsk, but most of the travelling is done with boats or dogs. The women are noted for their fine needlework, and some of the Kamshadále párkies are of great beauty and no little value. The embroidery is usually done in silk.

The Tungúsi or Lamúts. — These tribes range over an immense extent of territory, reaching from Lake Báikal to Kamchatka and the mouth of the Amoor, and from the shores of the Arctic Ocean to the Ochótsk Sea and the Chinese borders. They take their name from the Tungúska or Angára River, where they were first met with by the invading Russians in 1640. They are, of course, nomadic, and are distinguished as Reindeer, Horse, Dog, Forest, and River Tungúsi, according to their mode of life and domestic animals. Most of them have tame reindeer, but horses and cattle are not uncommon. They are said to number thirty thousand, and were formerly much more numerous, but are yearly declining from diseases introduced by the Russians. The unfortunate Tungúse who may lose his reindeer by wolves or sickness is reduced to a most miserable condition. Nothing is secure from these outcasts, who have sometimes been reduced to cannibalism, and are hunted down like wild beasts by their more fortunate countrymen. The Tungúsi are noted for their wit, jovial manner, and good temper. They are exceedingly intelligent, but malicious and deceitful. They are vain, and fond of beads and other ornaments. While hunting the reindeer they dress in deerskins, laying aside their finery, and wear water-proof boots to keep out the dampness of the tundri. They are expert with gun and sling, or in the use of the bow. They veil their eyes from the snow glare with a black horse-hair net. They are extremely bold and courageous, meeting the bear in single combat with only a knife.

The nomadic Tungúse uses a tent of skins or soft, pliable bark, which is easily transported. The house of the sedentary Tungúse is very small, and heated by a fire built on a stone hearth in the centre. Their food is obtained from their herds, or consists of fish, berries, and game. A favorite dish, as with the Norton Sound Innuit, consists of the half-digested contents of the reindeer's stomach, mixed with fat and berries. Many of them use the "brick" tea, which they obtain from the Chinese.

They dress the dead in their best clothes, and hang them in large chests between two trees. The weapons of the deceased are buried under the body. A reindeer is sacrificed during the ceremony. Their religion consists of a belief in shamánism, and but few are even nominal Christians. They anciently worshipped wooden idols called *Bul-wan*. They purchase their wives for twenty or a hundred reindeer from the parents, or serve, like Jacob, many years for them. They excel in athletic exercise, dancing, and chess-playing. They are the best of travellers, and are the usual companions of a journey in Eastern Siberia. They visit annually the fairs which are held in all the Siberian towns. They are of medium height, Tartar features, and light yellow complexion.*

The Yukagíri. — The tribe commonly known by this name are said by Saur to call themselves *Andon domni*, and are about eight hundred in number. They occupy the country between the Chúkchees and the Yakúts, especially on the Kolýma River. They are believed to consist of the remnants of some of the primitive Siberian nations. They have been greatly reduced by the small-pox, and also by their frequent wars with other tribes. They have black eyes and hair, pale and regular features. They are said to carry the bones of their deceased relatives about with them, especially when hunting. In manners and customs they much resemble the Tungúsi. They formerly were entirely supported by their deer, but many of them, who have lost their herds, live by hunting and fishing. With them are included some small bands known as *Chuvántses*.

The Yakúts. — The traditions of this great Semitic colony point to an origin near Tungúska River and Lake Báikal. At present they occupy the territory about the Léna, as far south as the Aldan, eastward to the Kolýma, and westward to the Yeniséi. They are nearly two hundred thousand in number, and form almost the entire population of the Yakútsk District. Their language bears a near relationship to the Turkish, while they are said to be of "Mongolian" features. This is one more item in the long list of facts which show the worthlessness of physiological characters as evidences of relationship between nations.

Their capital is at Yakútsk. They are an essentially pastoral

* Most of these details in reference to the Tungúsi and Yakúts are from Hartwig.

people, and live on the products of their herds of cattle and horses, though some of the more northern bands are reduced to herding reindeer.

Those whom I have seen were remarkable for their small eyes and noses, exceedingly prominent cheek-bones, stiff black hair, and diminutive size of most of the members of the body. Their civilization is of a high character in the cities, but many of the lower classes are little above the other northeast Siberian nomads in intelligence. They are of a reserved and somewhat gloomy disposition, but hospitable and generous. Many of their villages are very small, and to the north the solitary huts are many miles apart, so that the nearest neighbors see each other perhaps only once in several years. In summer the herdsmen live in conical tents made of birch-bark spread over light poles. Their principal occupation during this season is haying. In winter they live in *yourts*, or low, pyramidal log huts covered with turf and with slabs of pure ice for windows. As the weather grows warmer, these are replaced by the translucent bladders of fish, or oiled paper. The floor is generally below the surface of the ground; the fire is built on a stone hearth in the middle of the yourt, and the smoke escapes through a hole in the roof. They build stables for their horned cattle, but in very cold weather the more valuable cows may find refuge in the family yourt.

Their horses, though of small size, have great powers of endurance, and remain without shelter during the most severe weather, feeding on the dry herbage which they dig with their hoofs from under the snow. These animals travel thirty or forty miles without rest, and are admirably suited to the country. The Yakúts make excellent mechanics, and are hard to excel in driving a bargain. They are, as a rule, saving and industrious, and sometimes amass large fortunes, at least large for that part of the world. Their nationality is exceedingly energetic, and not only do they retain their own language and customs almost unchanged, but the Russians long resident among them, many of whom have married Yakút women, have also adopted their national tongue. In ingenuity they surpass all other Siberian nations, and their leather-work and some of their manufactures of iron would do credit to the most skilful European artisan. Long before the Russian conquest they manufactured their own knives and axes

from the ore found on the Wilna. These articles, either from the toughness of the metal or the method of manufacture, sustain the greatest cold without that liability to break which marks the European iron and steel. Their leather is perfectly water-tight, and the carpets woven by the women are even exported to Europe. They are excellent hunters and trappers, and untiring in the chase. Many of them are great gluttons. Sir George Simpson mentions an instance where two of them devoured seventy-two pounds of beef and thirty-six of melted butter at a sitting. One was old and experienced, the other young and zealous. At first the latter had the advantage. "His teeth are good, but with the assistance of my patron saint," said the old man, crossing himself, "I will soon come up with him!" It is said that at the Yakút weddings some of these professional gormandizers are invited for the amusement of the guests. Their favorite food is horseflesh, and sour mare's-milk, called *koómiss*, is their favorite beverage. A favorite dish called *salamat* is composed of a mixture of rye flour, koómiss, the inner bark of the larch, fat, dry fish, and berries.

They make clothing of the skins of their horses, and nets from horsehair. They catch fish in *zapórs*, or fish-traps, much like those of the Yukon Ingaliks. They are inveterate drunkards when they can procure liquor, and devoted to the use of tobacco. East of the Lena, they are the universal carriers, and travelling in this part of Siberia would be almost impossible without the Yakút and his horse.

They are tough and enduring, and fear no amount of cold or exposure, while they support the pangs of hunger with the utmost fortitude. Their powers of vision are remarkable, and some of them have been said to be able to distinguish the satellites of Jupiter with the naked eye. Their memory is wonderful, and every bush and hillock on the journey is remembered as a guide for the future. They wear many ornaments. Their párkies are adorned with fringes, beads, and embroidery. They are fond of music, but their songs are melancholy and usually devoted to the objects of nature around them or some of their national superstitions. Many of them are nominal Christians, but the belief in shamánism is nearly as strong as ever. The spirit of the woods is called *Lieshi*, and the Yakút is accus-

tomed to propitiate him by attaching a few hairs from his horse's mane to some solitary tree. The use of the gun has not entirely supplanted that of the bow, and they carry a weapon like a scythe blade, attached to a straight pole. They are a carnivorous race; though wheat matures near Yakútsk, they spend little time in cultivating the ground.

They were said by Muller to call themselves *Zinzákha*, from the name of one of their ancient princes. They did not worship wooden idols, but made a stuffed doll which they hung on a tree and regarded as an impersonation of an invisible spirit. Their shamáns were called *Bihun*, and very anciently they killed or buried alive the servants of their important chiefs after the death of the latter. Some of their dead were left exposed or covered with a hide, some were put in a box elevated on four posts, and others were buried. They bought their wives from the parents, and allowed polygamy. They were divided into eight tribes, each of which had some bird or animal which they regarded as sacred, and would not eat. Their new year began in April, at which time they were accustomed to sacrifice horses or cattle, hanging the heads and skins upon trees. Most of these ancient customs have long since passed away.

There were many Yakúts among the servants of the Russian American Company in Northwest America.

The Manchóos. — These are a Tartar people who live on the banks of the Amoor and along the borders of Siberia. They are closely allied in language, manners, and customs to the Chinese.

The Ghíliaks. — These are also a Tartar race who inhabit part of the country near the mouth of the Amoor and on Sakhálin Island. They are represented as a very intelligent people who have readily adopted Russian manners and civilization. Their language is almost monosyllabic. They are said to live almost exclusively on fish, but are also good hunters. They call themselves *Ghílien* or *Kílen*, and their appearance resembles that of other Tartar tribes.

Ai-án. — This is a small territory on the west coast of the Ochótsk Sea. It was formerly under the control of the Russian American Company. It had a governor appointed by the Crown, and is one of the best ports on the Ochótsk Sea. It is noted for the quality of the sables which are obtained there.

The Kúrile Islands. — These islands form a chain, extending from the extremity of the peninsula of Kamchatka to the vicinity of the island of Yesso, of the Japan archipelago. The name has been said to be derived from the Russian *kurćet*, to smoke. They are mostly of small size, and without trees. The larger are called *Yéterop*, *Yúrup*, and *Paramúshir*. They were also under the control of the late Russian American Company.

From them some bear, fur-seal, and sea-otter skins were formerly obtained.

The Áinos. — The Kúrile Islands are inhabited by a few hundred natives belonging to a nation which is also found on the northern point of Sakhálin Island, on the island of Yesso, and formerly on the southwest coast of the Kamchatkan peninsula. Japanese historians made mention of this people in the year 663 B. C. They call themselves *Áinu* or *Áino*. Their language is very imperfectly known, yet some authors have stated that it is similar to that of the northern inhabitants of Yesso or to the adjacent Tartar tribes, such as the Manchóos and Ghíliaks. Von Siebold says that the roots of the language differ from those of the neighboring dialects, and he definitely separates them from the Tungúsi and Kamshadáles.

The Áinos have greatly diminished in numbers since they became known to Europeans. Those on the Kúrile Islands have been subject to Russia since 1736. Those on the island of Yesso and those on Sakhálin were long since conquered by the Japanese, who treated them with great severity.

They are of light complexion, with horizontally placed eyes, broad faces, prominent noses, large ears, and a medium mouth. The cheek-bones are not prominent, and they are remarkable for their heavy beards and great development of hair, not only on the scalp and eyebrows, but all over the body.*

* From the above characteristics *solely*, without a knowledge of the grammar or vocabulary, some ethnologists have jumped to the startling conclusion that they are *Aryans!* The hairiness of body, though not quite so great, is found among some of the Innuit tribes of the Yukon delta, while among other tribes, unquestionably of the same origin, directly adjacent and speaking an almost identical dialect, even the mustache is not developed. The prominent noses and horizontal eyes are common among the tribes of Northeastern Siberia, especially the true Chúkchees, Kamshadáles, and Yukágirs. A similar course of reasoning, on the other hand, long placed the Yakúts (now known to be closely allied to the Turks and of unquestionable Semitic origin) among the Mongols with the equally distinct Yukágirs

The women tattoo the upper lip, and sometimes the lower one. They pierce the ears, and wear beads or silver rings in them. They sometimes wear their hair uncut, and sometimes cut it off in front. They dress in furs, sealskins, and the bark of trees, which is twisted into strings for the purpose. They bury the dead on their backs, at full length, enclosed in boxes. They weep and grieve for the dead very bitterly, even to the little children.

The name of the dead person is never mentioned; such an act would be considered the greatest rudeness. The husband's younger brother marries the widow, either for life, or until some one else asks her in marriage.

A widower may marry again in a month, but a widow is expected to remain single somewhat longer. There are no marriage ceremonies. The husband does not purchase his wife, but serves her parents. They have from one to three wives. They think little of matrimonial infidelities, yet, according to other authors, such give rise to duels fought with clubs, or the transgressor pays for his fault by such restitution as the husband demands. Until childbirth the wife remains in the family; after delivery, she lives apart for a month. They reckon time by moons or seasons. When sickness occurs a dog is sacrificed, as among the Chúkchees. Their religion is probably a belief in shamánism, as among the adjacent tribes. They travel with dogs in winter, and also eat them. The dog is their principal domestic animal, as they do not keep cattle or cultivate the ground.

They catch rats in traps, but do not eat them. The Japanese have introduced cats among them. They are accustomed to rear the cubs of the bear, and when full grown to make a feast, kill, and eat them.

They have but recently acquired the use of iron tools and weapons. Formerly they used implements of stone or bone. They use the root of the edible lily, and eat eggs and fish. They de-

and other tribes, simply because they had small eyes and projecting cheek-bones. The words of Whitney are applicable, when, speaking of the Scythian family, he says, "It is to no small extent those who know least in detail of the languages of the family who are most ready to assert and defend their historical connection"; and, again, in reference to the so-called "Turanian" family, "Such a sweeping and wholesale conglomeration, at the present stage of progress of linguistic research, is wholly unscientific, and of no authority or value. It represents only a want of detailed knowledge, and a readiness to give way to loose and unscrupulous theorizing, on the part of its authors."

pend in great part on the latter for food. The above facts refer to those living upon Sakhálin Island. There are said to be about two thousand five hundred of them.

The houses of the Yesso-Áinos are rectangular, with a porch about eight feet broad in front. They are built of small poles, fastened with strips of bark and covered with straw. Under the eaves are holes which serve as windows. They generally consist of one room, but they are sometimes divided by partitions. There are no floors, but the sand is covered with mats, and there is a platform on one side where the inmates lounge or sleep. The fire is made in the centre, and there are usually fish hung up over it to smoke. Altogether the huts much resemble the Tungúse yourts, but are less solidly built. They store their fish in a cache not unlike those in use among the Yukon Indians.

Fish are caught in nets made of twisted bark. The twine made in this way is woven into a kind of cloth, of which clothing is made. Young children go naked, and older ones are only provided with a long jacket.

They are fond of bear-hunting, and preserve the skulls as trophies. Their arrows are made of wood and reeds pointed with bamboo, and they are said to poison them. They consider it as a disgrace to part with their weapons. They carry short knives, but rely principally on their bows and arrows in hunting the bear and deer. They use snowshoes, which are made with a wooden frame and covered with deerskin. The lips of the women are tattooed after marriage. They also tattoo the back of the hands and other parts of the body. They cultivate millet and potatoes, an art probably learned from the Japanese. They use deerskin dresses. They have many deities, but address most of their prayers to fire. They do not buy their wives, but make presents to the parents. Their only feast is at the beginning of the new year, when they make offerings to all their gods. A man can have only one wife, but any number of concubines, each of whom lives in a separate house. When a wife dies, the house in which she lived is burned. The body of a dead man is clothed in white and buried in a sort of box in the ground with the head to the east. They have no written characters, but are said to convey information by means of notched sticks. They have no notion of a future state. They keep fowls and eat wild birds, but

not eggs. They average about five feet two inches in height, are broad-chested, well made, and have a fine appearance compared with the Japanese. Their eyes are always black, and their hair is of the same color. They are active and fond of work, seldom suffering from sickness. The Kúrile-Áinos are very few in number. They live almost entirely on fish, and are fond of travelling from island to island in their boats. They are noted for their mildness, quiet manners, hospitality, and general good-will toward strangers and each other.

The little knowledge * which we do possess with regard to this interesting people makes us regret that we know no more. They have probably adopted many customs from their Japanese conquerors. Without a grammar or vocabulary of their language, any theories in regard to their origin are mere speculation. The Japanese consider them to be descended from the original inhabitants of the islands, who, according to the Japanese records, were conquered by the former about the year 600 of the Christian era. Many of their habits and customs appear similar to those of the northeastern races of Asia.

Nikoláiffsk. — This town is situated near the mouth of the Amoor. It owes its principal importance to the trade of that river and the garrison which was transferred there from Petropávlovsk by the government in 1855. American and Sandwich Island traders monopolize most of its commerce. Owing to the difficult and dangerous character of the navigation of the Amoor, from the constantly changing sand-bars which obstruct the channel, most vessels carry their cargoes to De Castries Bay in Sakhálin Straits, whence it has been proposed to build a railroad to Nikoláiffsk. The population of the place is estimated at twelve thousand, and the trade is principally in lumber, liquors, fancy articles, and breadstuffs.

It has been proposed to form an ice company here, for the purpose of supplying the Chinese ports; but it is doubtful if the enterprise would pay for many years, as the market is very limited at present.

This concludes the list of points or people of interest in the foreign territories adjacent to Alaska.

* Most of the above facts are from a paper by Professor A. S. Bickmore, in Silliman's Journal, 1868.

APPENDIX.

Flag of the Scientific Corps.

MEMBERS.

ROBERT KENNICOTT,

W. H. DALL,	H. W. ELLIOTT,
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APPENDIX A.

GLOSSARY.

FROM ignorance of the true phonetic value of the Russian compound consonants, and from literal transcription, instead of phonetic translation, of the German rendering of Russian and native names, much confusion has arisen.

Many writers persistently represent the third letter of the Russian alphabet by W, writing *Románow* instead of Románoff, &c. The twenty-fifth letter is also frequently rendered T S C H instead of C H soft, as in *church*, which fully represents it in English. The Russian O, when not accented, should be rendered in English by A; from the neglect of this we have *Kódiak* instead of *Kadiák*, and many similar errors. The twenty-second letter of the Russian alphabet should properly be represented by K H in English; it has the exact value of the German C H as in *welcher*.

The spelling throughout this volume has been made as simple as the phonetic values would allow. It is to be hoped that authors in future will endeavor to follow up this reform, especially when they learn that it is as gross an error to spell *Kamchátka*, for instance, *Kamtschátka*, as it would be for a foreigner to represent the English word *church* by *tschurtsch*, and so on. The letter U in Russian and native words has almost invariably the sound of U in *Luke*.

This Glossary has been added to explain, more fully than was convenient in the text, the meaning and derivation of some words.

ALÁSKA. — This name, now applied to the whole of our new territory, is a corruption, very far removed from the original word. When the early Russian traders first reached Unaláshka, they were told by the natives that to the eastward was a great land or territory. This was called by the natives *Al-ák-shak* or *Al-áy-ek-sa*. The island now known as Unaláshka was called *Na-gún-aláyeksa* or "the land

near Aláyeksa." From Aláyeksa the name became, by corruption, *Aláksa*, *Aláshka*, *Aliáska*, and finally *Aláska*. Aláska is an English corruption; the Russians never used it. In all the later maps the name of the peninsula is spelled *Aliáska*, and this spelling has been preserved in this volume, as affording a convenient distinction between the general and the specific names. In the same way, Nagún-aláyeksa became *Agún-aláksa*, *Agún-aláshka*, and finally *Unaláshka*. The term *Unaláska* has no authority, is not known to either Russians or Aleuts, and I have not employed it, as it has no grounds for preference. We have, then, Aláska for the territory, Aliáska for the peninsula, and Unaláshka for the island; all derived from the same root, meaning a great country or continent.

Aleút, or Aleútian. — This term is now universally used to designate the inhabitants of the Aleutian Islands. Its origin is obscure. Some of the early writers state that it was derived from one of the Eastern Siberian dialects, and meant originally servant or slave. It is certain that it is a word foreign to the language of the islanders, who called themselves originally *Kagatáya Koung'ns*, meaning "men of the east," their traditions indicating an eastern or continental origin. The *Kaniagísti* or *Kaniágmut* of the island of Kadiák, quite a different branch of the Orarian stock, were also called Aleuts by the early traders.

Aliáska, a corruption of *Aláyeksa*. See *Aláska*.

Avácha, or Avátcha. — The name of a river in Southeastern Kamchátka, and also of the noble bay into which it falls. Originally *Su-wácha*, it was soon corrupted into Avácha by the Russians, and is well known by the latter name. Ignorance or stupidity has done its worst in the different methods of spelling this clear and simple name. On *Niakína Cove*, one of the numerous small harbors in the bay, is situated the town of Petropávlovsk.

Babíche. — The term applied by the French Canadians of Hudson Bay to a fine rawhide line, formed by removing the hair from the reindeer skin, soaking, cutting into line, and finally stretching and drying the latter. It is used by the voyageurs for the netting of their snowshoes, and lashing their sleds, or any use to which twine might be applied. A similar line is made from sealskin by the Innuit, and is generally known among the voyageurs as *rémni*. It is exceedingly tough and strong, and is used for the same purposes, on the coast, that are served by *babíche* in the interior. The *rémni*, according to my experience, is the better of the two.

Barrábora. — The Russian term for the Innuit winter houses or *tópeks*. The word *yourt* is frequently used to express the same idea, but a true yourt differs in many respects from a tópek. Iván's barrábora means simply John's house. It is perhaps derived from a Russian word which means a pigsty, or a confused, disordered heap.

Bering. — The name of the commander of the first Russian exploring expedition in the sea which bears his name. A fac-simile of his autograph, in a biography of the Russian admirals, proves incontestably that he spelled his name in this manner. It is generally written *Behring*, and sometimes *Beering*.

Bidárshik. — A Russian term used to indicate the commander of a small trading-post, one of several which are under the command of a Director or *Ĕprovalísha*. It is probably derived from *bidar* or *bidarrá*, and originally meant the captain of a large skin boat, or of a hunting party in such boats or bidarrás.

Casíne or Kasíne. — Derived, perhaps, from *casíno*, an assembly room, or from *casármer*, a barrack. It is used by the Russians to denote the dance-houses of native villages, which the Innuit call *Kagus-kéemi* (or *Kagi* at Davis's Strait). Richardson says that it is an Innuit word ; but the Innuit of Norton Sound do not use it or recognize it as other than a Russian word. *Kazóne* is the Russian for a cabin.

Esquimaux. — This word, which would perhaps be better written *Éskimo*, is derived from a word indicating a sorcerer, or shamán, in the language of the northern tribes. Forster says, that "in the language of the Abenaki, *Eskimántzik* means "eaters of raw fish." This may also be true, but the northern Tínneh use the word Uskeémí with the above signification, and apply it to the Esquimaux. From this the word *Húsky* (meaning Esquimaux) is derived, and is universally used by the Northern Hudson Bay voyageurs. It is also found in the Broken Slavé jargon with the same meaning. The Innuit name *Kag-uskeémi*, or house, where the shamáns conduct their dances and incantations, may be derived from the same root. In the dictionaries we find Esquimau (singular), and Esquimaux (plural), defined as a "tribe of Indians," &c. Sufficient has already been said to indicate the erroneous character of this definition. It would be much better to employ the single term Eskimo in a collective, and also an individual sense, as the etymology of the word is obscure, and the pronunciation Eskimoz is not in common use, although to be found in the dictionaries. Their own word *Innuit* is vastly preferable, and should properly take the place of the disputed term. The Davis's Strait Eskimo call the Greenlanders "*Aski*."

IGLÓO or IGLŬ. — The name is applied by the Esquimaux to their temporary ice houses, not, as asserted by Richardson, to their winter houses, which are built under ground. The latter are known as tópeks. The igló is peculiar to the Arctic coast, where it is usually built as a shelter while travelling. The Norton Sound Innuit are familiar with the word, and on showing one of Hall's pictures to one of them, and inquiring if he knew what it was, he immediately replied that it was an igló, but that they were only used as above described, and never necessary on Norton Sound, where the villages are close together. In Davis's Strait *topek* means a tent.

ÍNNŪIT. — The name (meaning *people*) applied to themselves by all the Orarians, except the Aleuts and perhaps the Eastern Siberian natives of the same stock. It is in use from Greenland to Bering Strait, and thence to the vicinity of Mount St. Elias.

IRKŬTSK. — The capital of Eastern Siberia, situated on the Angára River, which flows out of Lake Baikal, about one hundred and sixty miles from the Chinese boundary line of 1787. Sometimes confounded with *Yakútsk*, which see.

KADIĂK. — The name of the largest island south of Aliáska. It is a derivative, according to some authors, from the Russian *Kádia*, a large tub; more probably, however, it is a corruption of *Kaniág*, the ancient Innuit name. The inhabitants, according to Coxe, called themselves *Kaniágist* or *Kaniágmut*. This name is almost invariably misspelled by English authors, as *Kodiak*, *Codiac*, *Codiack*, *Kadiack*, and in other similarly absurd ways. The above is the only correct spelling.

KAMCHĄTKA. — The native name of the great peninsula which separates the Ochótsk from the Bering Sea. The above is the true phonetic spelling; the common method is a gross, unnecessary, and decidedly objectionable error.

KAMLÁYKA. — A water-proof shirt, made of the intestines of the seal or sea-lion, and used while travelling in their kyaks, or in rainy weather, by the Aleuts and Esquimaux.

KEGIKTÓWRŬK. — The native name of a village on Norton Sound. This has been variously misspelled, *Egictówit*, *Iglútówik*, &c. It is derived from *kíkhtuk* (an island), from two small islets which lie off of the cove.

KÍKHTŬK. — An island; in the Innuit tongue. Variously modified, it stands for different islands, as *Khtűkluk*, an island on the southern

coast; *Kegikhtŭ́tsahŭk*, Whale Island, near St. Michael's; *Kegíkhtuhhak*, the islets off Golsóva River; and *Kegíkhtuk*, Besborough Island.

Kolóshes. — A word applied by the Russians to natives of the Thlinket stock. The peculiar ornament worn by the married women is elsewhere referred to. This somewhat resembles a trough. The Aleutian word for trough is *Kalúga*, which, changed to a diminutive in the Russian, became *Kalúshka* (little trough). From this the name *Kalósh* was derived by corruption, and, after long usage, was adopted as a name for the Thlinkets by the Russians.

Kwikhpák. — A term derived from *Kweek* (a river), and *pak* (a suffix, meaning large), and used by the Innuit of the Yukon delta to designate one of the sloughs which form the delta. From the circumstance that the Russians usually entered the Yukon by that slough, they naturally, in ignorance of any other name, applied it to the whole river, which is laid down under that name in most Russian charts.

Lŭvták. — The Russian name applied to the skin of the sea-lion, or large seal, when prepared for use. It is derived from the Kamshadale *lakhtákh* meaning the large seal (like *phoca jubata*) which inhabits Bering Sea. The Innuit name of the same seal is *múklok*, a word which is also used by the Russians to designate sealskin.

Máhout or Máhwŭt. — A word of obscure origin, used by the Russians to designate large-sized line, made from walrus or muklok skin, by the Innuit, and used instead of rope on Norton Sound. It is of very great strength, but becomes soft and flabby if kept wet for any length of time. These lines are cut around the skin, and are sometimes two hundred feet long in one piece.

Mó-re. — The Russian word for "sea."

Ósera. — The word meaning "a lake" in Russian.

Óstrof. — An island. Plural *Ostróva*, diminutive *Ostrovók*, plural *Ostrofki*, all Russian words.

Óstrog. — The name, of Yakút derivation, used in Russian to denote a stockaded post or village. All the early Russian settlements in Eastern Siberia were thus defended, and called *ostrógi*. Thus we have *Anadýrsk óstrog*, meaning the stockaded village or settlement at Anádyr.

Papoósh. — The Russian name of a bunch of tobacco-leaves, weighing half a pound, or less, and tied with the stem of one of them, while green.

PÁRKA. — Plural *párki*, usually rendered, in English, *párkies*. A Russian word, meaning an upper garment of skin or fur, with a hood, and not open in front. They are used, with various modifications, by almost all northern nations. The Russian word for "shirt" is quite different.

POMÓZHNIK. — From *pomogíte*, the Russian verb, meaning "to assist." The term is usually restricted in Russian America to the secretary or assistant of the bidárshik, or commander of a trading-post.

POOD. — A Russian standard weight, being thirty-six pounds avoirdupois, and containing forty Russian pounds. The standards of measure are the *arshín* of twenty-eight inches, and the *sarzhén* or fathom, which is seven English feet.

POÓRGA. — A Russian word meaning a snow-storm attended with high wind. It is dreaded by all travellers, and sometimes proves fatal to those who are so unfortunate as to be travelling without means of shelter. It is a simoom, with cold and snow substituted for heat and sand.

POVÁRNIA. — Literally a kitchen, but also applied to houses built for travellers' shelter on the bleak plains of Siberia. These houses are also called *zemówi* (from *zémoi*, winter) meaning a winter house or shelter.

PRÁSNIK. — A holiday, or saint's day. There are eighty-six of these, beside Sundays, in the Russian calendar. No good Greek Catholic will work on a prásnik, except in case of great necessity. They are a fruitful cause of idleness, indolence, and vice.

PRATÓKA. — The Russian name for sloughs, or arms, which leave a river or other body of water, and afterward re-enter it. They are extremely common on the Yukon.

REEKÁ. — The Russian for "a river," the dimunitive being *réechka*, and the plural *reekée* or *reéchkee*.

REMÉN. — Fine sealskin line. Collectively *rémni*. See *Babíche*.

SHAMÁN. — Derived from the Yakút *shamán* meaning "holy," but now understood as meaning a sorcerer, or "medicine-man," among the aborigines. This word and its derivatives have been adopted into the English language by lexicographers, but Webster puts the accent wrongly on the first syllable. It is also in use in German, French, and Russian. Some authors have mistaken it for an Indian word.

Sópka. — A Russian word meaning strictly a volcano or volcanic peak, but also applied to any solitary peak, in common usage. *Vesólia Sópka* means "Cheerful Peak."

Sver. — A Russian word, meaning "north." The Russians have two sets of words to denote the points of the compass, one of them in use in the vernacular is given below; the other has been adopted bodily from the German, and is especially in use among navigators. The Slavonic terms are as follows: —

Sver, North.	*Vóstok*, East.
Uzh, South.	*Zapad*, West.
Svérnoi vostóchnoi, Northeast.	*Svérnoi zapádnoi*, Northwest.
Úzhni vostochnoi, Southeast.	*Úzhni zapadnoi*, Southwest.
Svérnoi, Northern.	*Úzhnoi*, Southern.
Vostóchnoi, Eastern.	*Zapádnoi*, Western.

Ty-ówn or Tyóne. — This word is as widely distributed as Cæsar and its derivatives, and has much the same meaning. It denotes a chief or head man. The Yakút word is *toygón;* the Japanese *tycoón* or *zigoón*; the Tartar *Khan* is not improbably the same root. Wherever the Russians have gone, they have carried this word with them, and it is in common use among the Aleutians and those Yukon tribes who trade with the Russians. The Chinook *tyhée* may be an accidental resemblance. The Innuit do not use it, as they prefer their own words with the same meaning, viz.: *Omáylik* and *Óngiuk.*

Túndra. — A rolling, grassy plain without trees, such as are found in Northeastern Siberia. There is no corresponding English word. The plural is *túndri.* The Russians call the white-fronted geese (*A. Gambellii*) *túndrini.* The same word is sometimes applied to wandering tribes, such as the *Yukágirs* and *Koriáks.*

Unalaklík. — A village, on the river of the same name which falls into Norton Sound. It has been incorrectly written Unalakleét and Unalachleét.

Unaláshka. — The largest of the Fox Islands. See *Alaska.*

Uprovalísha. — Literally a director. Applied in Russian America to a chief trader, or commander of a Redoubt, who generally has also the supervision of several less important posts or forts (*adenóchki*), which are in charge of bidárshiks.

Yakútsk. — The capital of the Yakút Province in Eastern Siberia. It is situated in latitude 63° north, upon the river Lena, about twenty-

seven degrees east of Irkútsk. Wheat matures here, though the summer is very short, and the earth at the depth of a foot is always frozen.

YŬKON. — The English corruption of the Indian word *Yukónna*. This word, which is common to all the Tínneh who reside on its banks, is not exactly represented in English by the phrase "great river." *Kákhat* means "river" in the same dialect, and *Kĕtakakhat* means "small river." The sense in which *Yukónna* is used is more like that in which we use the word "sea" when referring to the whole body of oceanic water. We have no words in the English which exactly express the whole idea. We may approach it by saying that it means "*the* river, *par excellence*." It has been frequently spelled *Youkon*, and also *Yúcon* and *Youcan;* but Yukon represents the phonetic value according to the rules which are followed in this volume.

ZAPÓR. — A word used by the Russians to denote the fish-traps, or weirs, built by the natives on the Yukon, as elsewhere described. The Yakúts, I am informed, catch fish in a similar manner, but the Kutchin tribes do not understand the art.

APPENDIX B.

POPULATION OF ALASKA.

Corrected from Russian estimates, and, if anything, above rather than below the actual number.

	Russians.	Creoles.	Natives.
Sitka	349	419	1000
Remainder of Alexander Archipelago			1500
Stikine River			1300
Chilkáht River			1800
Yákutat Bay			250
Copper River			1500
Chugách Gulf			600
Kenái and Aliáska Peninsula	10	85	1500
—— Kadiák Group. ——			
St. Paul Harbor	50	150	450
Other Settlements		153	800
Afognák		200	350
Woody (Lésnoi) Island	10	65	214
Spruce (Yelówy) Island			100
Chirikoff Island (Úkamok)	2	10	
Únga Island		25	164
—— Catherina Archipelago. ——			
Unaláshka	25	125	445
Umnak			100
Amlia			150
Átka		65	220
Attú		55	155
Other Islands			150
—— Príbyloff Group. ——			
St. Paul's	4	15	250
St. George's	2	5	95
Nushergák River	5	15	500
Kuskoqúim Delta		3	250
Upper Kuskoqúim			1500
Coast from Cape Románzoff to Stuart Island	1	6	3000
Coast of Norton Sound	10	10	1000
Káviak Peninsula			1500
Sledge Island			100
St. Laurence Island			300
The Diomedes			150
Arctic Coast			1000
—— Yukon Indians. ——			
Ingaliks			2000
Koyúkuns			500
Unakhatána			300
Tenán Kutchin			400
Kutchá Kutchin			250
Other Tribes			1000
Resident on the Yukon	15	20	
Total	483	1421	26,843

Russians and Siberians	483
Creoles or half-breeds	1,421
Native tribes	26,843
Americans (not troops)	150
Foreigners (not Russians)	200
Total population	29,097

The actually civilized population is about thirteen hundred.

APPENDIX C.

STATISTICS OF THE FUR TRADE OF ALASKA.

Kind of peltry.	1786 to 1797.	1797 to 1821.		1821 to 1842.	1842 to 1862.	Total production in 76 years.
		Exported.	Sold in the Colonies.			
Sea otter skins	114,195	86,644	10,392	25,416	25,899	262,546
Sea otter tails	72,559	71,130	8,411	23,506	25,797	201,403
Beaver skins	428	56,001	15,025	162,034	157,484	390,972
Otter	5,039	17,768	2,145	29,442	70,473	124,867
Fur seal	557,024	1,767,340	377,642	758,502	372,894	3,833,402
Black and silver fox	15,046	15,112	10	17,913	}	66,081
Cross fox	20,369	24,535	482	26,462	} 77,847	93,848
Red fox	20,665	35,456	1,273	45,947	}	141,188
White fox	1,517	5,130	30	13,628	}	32,307
Blue fox	68,361	45,904		55,714	} 54,134	222,113
Marten	200	17,921	342	15,666	12,782	46,911
Wolverine		1,234		1,564	100	2,898
Wolf				201	24	225
Mink		5,349	61	15,481	1,872	32,763
Black bear		2,650		5,355	1,993	9,998
Musk rat				250,000	1,300,000	1,550,000
Hair seal	?	27		?	?	27
Wild cat or lynx		1,819		?	6,927	8,746
Pounds of ivory	27,792	51,622	2,016	234,040	27,550	343,020
Pounds of whalebone	35,172	72,396	4,608	124,390	?	236,466
Pounds of castoreum		281		1,287	879	2,447

NOTE. — These estimates are unquestionably below the truth. The Company systematically underrated their profits and the amount of the annual production, from motives of policy. This will be evident to any one who will compare the production of furs as stated in the Reports published in St. Petersburg with the amount as given in the Reports published at Sitka.

The number of musk-rat skins is not to be found in the Reports, but is given on the authority of officers of the Russian American Company.

The above does not include the number of skins obtained by the English, American, and Sandwich Island trader, which, in the continental furs, has averaged one third annually since 1850, in addition to the figures given in the table.

APPENDIX D.

METEOROLOGY.

Meteorological Observations at St. Michael's Redoubt, Norton Sound, 1842–43, by Lieutenant Zagóskin, I. R. N.

July 25th to 31st, 1842. No clear days. One cloudy day. Five rainy days. No aurora. General average of temperature +57°.06 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+56°.59	+60°.03	+59°.40	+52°.25
Maximum	+62 .50	+67 .43	+64 .62	+55 .62
Minimum	+50 .00	+57 .31	+55 .69	+47 .75

August 1st to 13th and 24th to 31st, inclusive, 1842. (Clear on the 14th.) Eleven cloudy days. Ten rainy days. No aurora. General average +52°.76 Fah.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+52°.57	+57°.78	+53°.93	+46° 80
Maximum	+63 37	+67 .43	+65 .18	+54 .50
Minimum	+43 .81	+47 .08	+44 .93	+44 .93

September 1st to 30th, 1842. Five clear days. Twenty-one cloudy days. Four rainy days. No aurora. General average +47°.41 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+46°.01	+53°.87	+48°.93	+40°.87
Maximum	+56 .75	+65 .18	+57 .80	+48 .87
Minimum	+38 .18	+49 .43	+42 .12	+30 .88

October 1st to 31st, 1842. Four clear days. Fifteen cloudy days. Twelve rainy days. No aurora. General average +33°.23 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+31°.35	+37°.15	+33°.55	+31°.16
Maximum	+43 .25	+52 .25	+43 .81	+41 .00
Minimum	+18 .50	+25 .81	+23 .00	+16 .25

November 1st to 30th, 1842. Three clear days. Twenty-two cloudy days. Six rainy or snowy days. No aurora. General average +22°.35 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+21°.00	+25°.39	+21°.34	+21°.74
Maximum	+38 .75	+44 .37	+42 .12	+41 .00
Minimum	— 2 .87	+ 7 .25	— 1 .19	— 1 .75

December 1st to 31st, 1842. Eight clear days. Fourteen cloudy days. Nine rainy or snowy days. No aurora. General average +0°.77 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	— 0°.62	+ 3°.05	+ 1°.07	+ 1°.61
Maximum	+30 .87	+30 .87	+30 .32	+29 .75
Minimum	—23 .68	—21 .43	—22 .26	—24 .25

January 1st to 12th, 1843. Four clear days. Seven cloudy days. One rainy day. No aurora. General average —5°.14 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	— 7°.14	— 1°.23	— 6°.00	— 6°.20
Maximum	+26 .48	+28 .63	+24 .13	+21 .32
Minimum	—35 .50	—28 .75	—32 .68	—35 .50

January 12, 1843, observations at St. Michael's discontinued.

Observations taken at Nuláto, 1843, by Lieutenant Zagóskin, I. R. N. Lat 64° 42′ 11″ N. and Lon. 157° 56′ 18″ W. G.

Jan. 28th to 31st, 1843. Two clear days. Two cloudy days. No rain, snow, or aurora. Average —25°.10 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	—30°.01	—22°.37	—23°.49	—24°.79
Maximum	—22 .00	—15 .25	—16 .93	—19 .18
Minimum	—33 .12	—33 .25	—32 .12	—31 .00

Feb. 1st to 28th, 1843. Fifteen clear days. Six cloudy days. Seven snowy days. Aurora in the N.W. and E N.E. (Mag.) from the 6th to 12th inclusive, every night. General average —2°.59 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	— 8°.11	+ 7°.07	— 0°.10	— 8°.81
Maximum	+33 .12	+36 .50	+29 .75	+24 .61
Minimum	—40 .00	—16 .37	—19 .75	—35 .50

March 1st to 31st, 1843. Three clear days. Seventeen cloudy days. Eleven snowy days. Aurora on the 7th from 8 P. M. to 1 o'clock. General average +22°.96 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+19°.18	+29°.48	+25°.50	+17°.67
Maximum	+38 .18	+41 .00	+41 .00	+37 .06
Minimum	—18 .06	+ 5 .00	+ 7 .25	—17 .50

April 1st to 30th, 1843. Three clear days. Cloudy sixteen days. Eleven snowy days. Aurora on the 6th. General average +22°.10 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+27°.89	+33°.46	+31°.28	+18°.08
Maximum	+42 .12	+46 .62	+42 .12	+42 .12
Minimum	+ 8 .38	+19 .53	+17 .48	— 7 .37

May 1st to 31st, 1843. Five clear days. Seventeen cloudy days. Nine rainy or snowy days. No auroras. General average +44°.21 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+45°.02	+49°.01	+47°.99	+34°.67
Maximum	+65 .75	+60 .12	+60 .12	+52 .25
Minimum	+21 .88	+26 .94	+29 .19	+17 .48

June 1st to 20th, 1843. One clear day. Sixteen cloudy days. Three rainy days. No aurora. General average +65°.41 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+62°.75	+77°.21	+76°.37	+51°.30
Maximum	+70 .25	+86 .00	+84 .31	+57 .87
Minimum	+48 .87	+57 .87	+59 .00	+39 .87

June 20th, observations at Nuláto discontinued.

Observations at the Ekógmut Mission, Lat. 61° 55′ *N. and Lon.* 161° 18′ 56″ *W. G., by Lieutenant Zagóskin, I. R. N.* 1843.

Sept. 13th to 30th, 1843. No clear days. Eleven cloudy days. Seven rainy days. Pale aurora on the 22d. General average +45°.56 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+44°.11	+50°.15	+49°.03	+37°.94
Maximum	+51 .68	+57 .87	+62 .37	+46 .02
Minimum	+34 .81	+42 .68	+43 .25	+27 .50

October 1st to 31st, 1843. One clear day. Fifteen cloudy days. Fifteen rainy or snowy days. Aurora on the 24th. General average +37°.73 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+35°.26	+40°.95	+39°.98	+34°.83
Maximum	+41 .16	+52 .25	+50 .56	+42 .12
Minimum	+20 .75	+34 .25	+33 .12	+24 .13

Nov. 1st to 30th, 1843. Two clear days. Twenty-four cloudy days. Four rainy or snowy days. No aurora. General average +19°.74 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+18°.54	+22°.13	+22°.38	−16°.92
Maximum	+38 .75	+44 .37	+42 .12	+38 .75
Minimum	−17 .50	−10 .75	−10 .75	−15 .25

Dec. 1st to 4th, 1843. One clear day. One cloudy day. Two snowy days. No aurora. General average −13° 94 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	−19°.32	−12°.30	−12°.86	−11°.31
Maximum	+ 7 .25	+10 .07	+ 9 .50	+ 9 .50
Minimum	−40 .00	−29 .31	−32 .12	−40 .00

December 4th, observations at the Mission discontinued.

Observations at Kólmakoff Redoubt, Lat. 61° 34′ 02″ *N. and Lon.* 158° 37′ 11″ *W. G., by Lieutenant Zagóskin, I. R. N.* 1843–44.

December 15th to 31st, 1843. Eleven clear days. Four cloudy days. Two snowy days. No aurora. General average −27°.22 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	−29°.24	−26°.23	−25°.89	−27°.69
Maximum	− 1 .06	− 0 .50	− 4 .00	− 4 .00
Minimum	−44 .50	−41 .68	−41 .68	−42 .25

Jan. 1st to 31st, 1844. Eight clear days. Thirteen cloudy days. Ten snowy days. Pale aurora on the 20th. General average −0°.38 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+ 1°.02	− 0°.06	− 0°.13	− 1°.21
Maximum	+35 .37	+37 .06	+32 .56	+38 .75
Minimum	−49 .00	−31 .00	−31 .00	−35 .50

Feb. 1st to 5th, 1844. One cloudy day. Four snowy days. No aurora. General average +23°.95 Fahrenheit.

	8 A. M.	Noon.	4 P. M.	Midnight.
Average	+23°.80	+26°.27	+25°.37	+22°.89
Maximum	+34 .25	+25 .25	+25 .25	+25 .25
Minimum	+ 7 .25	+16 .25	+16 .25	+ 2 .75

February 5th, observations at Kólmakoff Redoubt discontinued.

YUKON TERRITORY.

(SCIENTIFIC CORPS W. U. T. EX.)

Temperature at	1866–67. Nuláto.			1866–67. Unalaklik.			1865–66. St. Michael's.		
	Mean.	Max.	Min.	Mean.	Max.	Min.	Mean.	Max.	Min.
January . . .	—18°	+ 15°	—49°	—10°	+16°	—45°	— 1°	+32°	—36°
February . .	—13°	+ 25°	—47°	.....	.....	.....	+22°	39°	— 1°
March . . .	+15°	+ 38°	—40°	.....	.....	.....	+21°	44°	— 3°
April . . .	+27°	+ 49°	0	.....	.....	.....	+27°	41°	+ 6°
May. . . .	+46°	+ 74°	+22°	.....	.....	.....	+40°	55°	+27°
June . . .	+65°?	+ 90°?	+40 ?	.....	.....	.....	+51°	61°	+42°
July	+60°?	+120°?	+40 ?	.....	.....	.....	+53°	63°	+46°
August . .	.....	.....	.....	.....	.....	.....	+55°	69°	+46°
September . .	.....	.....	.....	.....	.....	.....	+40°?	60°?	+30°?
October . .	.....	.....	.....	+19°	+36°	— 1°	+33°	47°	+20°
November . .	.....	.....	.....	+ 6°	+29°	—28°	+ 6°	26°	—19°
December. .	—11°	+ 16°	—56°	+ 3°	+32°	—34°	+ 5°	35°	—31°

UNALASHKA.

Observations for temperature at Iliúluk.

(VENIAMÍNOFF.)

Average for	1830.						1831.					
	7 A. M.	1 P. M.	9 P. M.	Max.	Min.	Range.	7 A. M.	1 P. M.	9 P. M.	Max.	Min.	Range.
Old Style.												
January . . .	20°	25°	22°	39°	4°	35°	28°	30°	28°	41°	10°	31°
February . .	25	33	26	44	0	44	26	29	26	48	11	37
March . . .	17	24	18	45	1	44	26	30	24	41	7	34
April . . .	38	41	35	50	29	21	32	38	30	46	16	30
May . . .	39	43	37	55	32	23	37	41	36	52	27	25
June . . .	46	46	42	57	39	18	45	48	42	58	34	24
July . . .	50	53	47	71	42	29	47	48	44	64	39	25
August . .	54	58	51	77	44	33	47	51	44	62	39	23
September . .	42	45	42	50	28	22	40	43	38	52	32	20
October . .	35	38	36	46	28	21	35	39	35	45	23	22
November . .	28	31	30	44	15	29	32	35	32	40	21	19
December . .	24	26	23	41	9	32	30	33	29	39	14	25
Average . . .	35	38	34	77	0	77	36	40	34	64	7	57

Observations at Ililluk, continued.

Average for	1832. 7 A. M.	1 P. M.	9 P. M.	Max.	Min.	Range.	1833. 7 A. M.	1 P. M.	9 P. M.	Max.	Min.	Range.
Old Style.	°	°	°	°	°	°	°	°	°	°	°	°
January	25	32	24	41	7	34	29	33	29	39	18	21
February	34	37	33	48	25	23	33	36	32	42	18	24
March	34	38	32	64	18	46	30	37	35	59	20	39
April	36	39	37	48	26	22	37	40	35	48	18	20
May	45	46	38	62	32	30	43	45	40	62	37	25
June	47	50	46	66	41	25	46	48	42	67	43	24
July	52	55	49	70	43	27	53	58	51	76	44	32
August	54	58	53	77	42	35	50	54	47	74	38	36
September	40	46	40	59	26	33	44	48	44	55	32	23
October	34	38	35	48	24	24	35	40	34	49	20	29
November	33	35	34	48	26	22	26	31	26	37	6	31
December	29	31	30	46	18	28	26	28	26	39	5	34
Average	39	42	38	77	7	70	38	41	36	76	5	71
							Means 1828.					
Average for 5 years	37	40.5	36	77	0	77	Spring.	Summer.	Autumn.	Winter.		
							36.60	51.5	38.70	36.27		

SITKA.

YEAR ENDING OCTOBER 31, 1868. U. S. COAST SURVEY.

	Mean Temp.	Rainfall.	Fair days.	Cloudy days.	Rainy days.	Snowy days.
	°	Inches.				
January	29.2	7	18	13	3	3
February	36.4	4.35	9	20	12	0
March	37.8	5.72	4	27	5	13
April	44.7	1.37	8	22	10	0
May	45.5	7.55	9	22	18	2
June	55.3	1.93	11	19	4	0
July	55.6	4.20	3	28	18	0
August	56.4	4.01	6	25	14	0
September	51.9	6.81	10	20	12	0
October	49.2	7.27	3	28	14	0
November	36.6	14.62	6	24	18	5
December	30.2	3.24	7	14	6	3
Annual means	44.07	68.07	106	260	134	26

MEANS OF FOURTEEN YEARS' OBSERVATIONS AT SITKA, 1849 TO 1862.

(Russian Observers.)

	Spring.	Summer.	Autumn.	Winter.	Whole year.
Thermometer, degrees.	41.3	54.3	44.2	31.9	42.8+
Barometer, inches . .	29.836	29.929	29.749	29.730	29.721
Rainy days	55	66	72	57	245
Rainfall, inches . . .	13.995	15.408	30.814	22.931	83.33

APPENDIX E.

LATITUDE AND LONGITUDE OF IMPORTANT POINTS.

Locality.	Latitude.	Longitude.	Authority.
	° ′ ″	° ′ ″	
San Francisco, California	37 47 52	122 23 19	U. S. Coast Survey.
Victoria, Vancouver Island	48 25 30	123 20 05	" " "
Fort Simpson, B. C.	54 33 42	130 23 46	" " "
Village, Tayakhónsity Harbor	54 46 0	130 35 0	Tébenkoff.
Cape Kygáni or Muzon	54 42 0	132 43 48	U. S. Coast Survey.
Gardner Harbor	54 49 0	131 45 0	Tébenkoff.
Anchorage Tóngas Harbor	55 03 0	131 25 0	Étolin.
Étolin Harbor	56 31 30	132 20 0	Zarémba.
Mouth Chilkáht River	59 14 0	134 24 10	Tébenkoff.
Mouth Stikíne River	56 40 0	132 20 0	Adm. ch. 2431.
Mouth Táku River	58 27 0	133 54 0	Vancouver.
Mount Edgecumbe, 2,855 feet	57 02 48	135 40 12	Vasílieff.
Cupola, Governor's house, Sitka	57 02 47	135 17 08	U. S. Coast Survey.
Mount Vostóvia, 3,216 feet	57 03 23	135 12 57	" " "
Lincoln Harbor, Noquashínski Bay		135 25 56	" " "
Cape Spencer	58 12 30	136 34 0	Vancouver.
South Point, Litúya Bay	58 34 30	137 16 0	La Perouse.
Mount Fairweather, 14,000 feet	58 57 0	137 27 0	Vancouver.
South Point, Bering Bay	59 33 0	139 42 0	"
Mount St. Elias, 16,000 feet	60 22 36	140 54 0	"
Western Mouth, Copper River	60 30 0	145 54 0	Serebránikoff.
Fort Constantine, Port Etches	60 20 18	146 52 50	Belcher.
Cape Elisabeth	59 09 0	151 51 0	Vancouver.
Coal Point, Chugáchik Bay	59 37 12	151 22 36	Archimándritoff.
Redoubt, St. Nicholas, Káknu River	60 32 12	151 19 18	Heldt.
Mouth of Knik or Fire River	61 08 0	150 07 30	Vancouver.
Mouth of Suchítna River	61 16 30	150 37 0	Tébenkoff.
Redoubt Volcano, 11,270 feet	60 28 0	152 38 0	"
Iliámna Volcano, 12,066 feet	60 05 30	153 07 30	"
Cape Douglas	58 52 30	153 16 0	Vancouver.
Flag staff, St. Paul, Kadiák	57 47 45	152 20 57	U. S. Coast Survey.
Ice Depot, Woody Island	57 46 57	152 18 37	" " "
Three Saints' Harbor	57 06 48	153 25 30	Archimándritoff.
Katmái Village, Aliáska	58 02 36	154 52 48	Vasílieff.
House, Coal Harbor, Únga	55 24 0	160 49 0	Tébenkoff.
Village, South Harbor, Unga	55 10 48	160 27 0	Kashevároff.
Shisháldin Volcano, 8,955 feet	54 48 0	163 59 30	Krenítzin.
Isanótski Volcano, 5,525 feet	54 39 0	164 32 0	"

Locality.	Latitude.			Longitude.			Authority.
	°	′	″	°	′	″	
Entrance Iliúliuk Harbor, Unaláshka	53	25	30	166	49	0	Sarýcheff.
U. S. C. S. astr. st. Ulákhta Harbor	53	53	58	166	32	47	U. S. Coast Survey.
Mákushin Volcano, 5,691 feet	53	52	30	166	45	0	Tébenkoff.
Bogoslóva Volcano, 1,000 feet	53	52		167	39	0	Krenítzin.
S. W. point Svéchnikoff Bay, Amlia Isl'd	52	02	18	173	10	30	Salámatoff.
Anchorage E. side of Átka Island	52	10	30	174	0	30	"
Village, Korovínsky Bay	52	11	54	174	22	30	Étolin.
Korovínski Peak, 4,852 feet	52	23	30	174	02	0	Pávloff.
Sítkin Peak, 5,033 feet	53	03	30	176	06	24	Ingestrom.
Peak Sea-Otter Island, Kánaga	51	55	18	177	30	30	Salámatoff.
Anchorage, Slavarássi Bay	51	47	0	178	02	0	"
Anch. Kiriloff Bay, Amchítka	51	25	30	180	45	0	Gibson.
Khústoff Peak, 1,873 feet	52	08	0	181	41	0	"
Cape Wrangell, Attú Island	52	58	0	187	34	0	"
Flagstaff, Chichagoff Harbor, Attú	52	55	42	186	47	18	"
Fort Alexander, Nushergák River	58	57	06	158	18	24	Wrangell.
Fort St. Michael, Norton Sound	63	28	0	161	51	54	Kellett.
	63	28	0	161	44	0	Zagóskin.
Unalaklík Post, Norton Sound	63	52	33	160	40	0	Kashevároff.
	63	53	33	160	30	16	Zagóskin.
Besborough Island	64	06	30	161	07	0	Khramchénko.
Áziak or Sledge Island	64	29	30	166	01	30	Beechey.
Cape Rodney	64	39	0	166	18	0	"
Cape Spencer, Port Clarence	65	16	42	166	47	48	"
Cape Prince of Wales	65	33	30	167	59	12	"
Cape Spanberg	66	42	0	163	34	0	"
Cape Lisburne, 849 feet	68	56	0	166	08	0	"
Cape Beaufort (coal vein)	69	13	0	163	34	0	"
Icy Cape	70	20	0	161	40	0	"
Point Barrow	71	27	0	156	15	0	"
Demarcation Point	69	40	0	141	07	30	Dease & Simpson.
West Cape, St. George's, Príbyloff Islands	56	38	18	169	44	0	Archimándritoff.
West Cape, St. Paul, Príbyloff Islands	57	10	12	170	01	06	Tébenkoff.
Cape Upright, S. E. P't, St. Matthew Isl'd	60	18	0	172	04	0	Lütké.
Cape Étolin, North Point, Núnivak Island	60	31	0	165	50	0	Tébenkoff.
S. E. Cape, St. Lawrence Island	62	57	0	169	24	5	Pávloff.
N. W. Cape, St. Lawrence Island	63	51	12	171	29	0	Beechey.
Úkivok or King Island, 750 feet	64	58	30	167	58	0	Khramchénko.
Fairway Rock	65	38	36	168	43	42	Beechey.
Middle of Channel between the Diomedes, U. S. boundary line	65	48	36	168	56	30	Adm. ch. 2435.
	65	47	48	168	58	0	Tébenkoff.
End of Sandspit, Plover Bay	64	22	25	173	30	32	Prof. Asaph Hall.
East Cape of Asia	66	03	06	169	43	48	Beechey.
Mouth of Anádyr River	64	35	40	183	28	10	Russian charts.
Cape St. Thaddeus, Kamchatka	62	40	0	180	36	20	" "
Amátignak Island. Most southern point of Alaska Territory	51	19	0	179	08	30	Gibson.
	51	12	0	179	05	0	Salámatoff.

APPENDIX F.

VOCABULARIES.

The spelling of the vocabularies obtained from other authors has not been altered. Most of them should be pronounced as in German. In Saur's vocabularies "i" is always short, otherwise as in German. Stimpson's is reduced to the Smithsonian standard as given in the instructions in Ethnology and Philology. In my own the pronunciation is as in English with the following rules: "ū" is long as in *Luke*, otherwise as in *cup;* "a" as in father; but all vowels followed by a consonant in the last syllable of words are short, unless otherwise indicated. Long "a" in the last syllable is denoted by the addition of the letter "h"; "ch" as in *church;* "kh" like German "ch" in *welcher;* "g" always hard; "th" soft; and "ng" a rolling nasal, as in French.

I am under great obligations to Mr. George Gibbs for advice and assistance in this part of the work.

My own vocabularies were collected with the utmost care, and verified many times over, before I left the country.

I have phonetically translated from the Russian, Wrangell's Innuit vocabulary of the Kuskoqúim, as in its former state it was inaccessible to many students.

STOCK.	ORARIAN.					
FAMILY.	ALEUTIAN.		INNUIT.			
Tribe.	Unaláskan.	Atkan.	Ugalákmūt.	Chugátchigmūt.	Koniágmūt.	Nushergágmūt.
Man	Taggiach	Toioch	Akwin	Nūgūlpeuk	Nūkalnyak	Agiun
Woman	Angaginak	Aiyagar	Agnak	Aganak	Aganok	Agnak
Wife	Agegai	Aiyagai	.....	.....	Nūliga	.....
Boy	Anektok	Anekthok	.....	.....	Tanoghak	.....
Girl	Achadok	Ogegilikin	.....	.....	Aggeakak	.....
Chief	Taiaghu	Toigon	.....	Angáiyou-[gok	Tūyūkh	.....
Water	Tanach	Taangak	Mik	Mik	Tangak	Mik
Snow	Kanich	Kaneek	Kanichtehak	Katagak	Anneg	Kannikak
Ice	Kelach	K'thak	.....	Tchagūk	Tschigo	.....
Rain	Chichtach	Chiūtakik	Schliachlūk	Kitichtouk	Kidak	Tliachlūk
Land	Chikitch	Chegak	Nūnna	Nouna	Noona	Nouna
Island	Chananak	Taangik	.....	.....	Kightak	Kightak
Fire	Nignach	Kignach	Knik	Knákhk	Knok	Knik
Reindeer	Ithayok	Itkayech	.....	Kana-et	Toondoo	.....
Fish	Kach	Koach	Tchadak	T'katlink	Ekachlewt	Nunka
Knife	Kamlich	Ungazchi-[ship	Noshek ?*	Nowgūchak	Tschangielk	Ulviak
Good	Macheeselik	Chizchelik	.....	.....	Azigtoak	.....
Bad	Macheedoli-[kan	Malcheeshelikan	.....	.....	Asseelrok	.....
Big	Anianach	Tangoellik	Antvadouk	Anishkak	Anguk	Antoak
Little	Angnunada-[kalak	Angonolokn	.....	Mikango-[shak	Meyuk	.....
Hot	Akivakselik	Akvachelik	.....	Magakhtok	Nogtoak	.....
Cold	Kinanach	Kinganalik	Nglia	Apachtok	Potznatok	Nuglia
I	Tinn	Keen	Roingnia	Koo-i	Choo-i	Hwignia
You	Thinn	Ingaan	L'bitt	'Tlpit	Chl'pit	'Lbit
He, she, [*or* it	Inan	Ikoon	Oum	Oum	Oona	Tkna
Yes	Ang	Aang	.....	.....	Ang	.....
No	Kogcho	Maselikan	.....	.....	Pedok	.....
One	Atakan	Attokan	Ataouchik	Atchimūk	Acheluk	Ataouchik
Two	Alach	Alluk	Aipa	Malgook	Malogh	Aipa
Three	Kankjanūn	Kankoon	Pinnadūk	Pinnagon	Pingaien	Pinanvak
Four	Sitchin	Shitchin	Schtamik	Schtaman	Stamen	S'chamit
Five	Tchann	Chang	Talimik	Talimin	Taliman	Talimit
Six	Atyoon	Attoon	Aghvinik	Akwiljin	Agowinligin	Awiunat
Seven	Talann	Olung	(2 repeat)	Malchūlin	Malchūgun	(2 repeat)
Eight	Kanitchin	Kamtsching	(3 repeat)	Inmolgin	Inglūgin	(3 repeat)
Nine	Sitchinin	Sitching	(4 repeat)	Koulmūjan	Kollengaien	(4 repeat)
Ten	Atik.	Nasuk	(5 repeat)	Koulin	Kollen	Koulin
Authority.	Saur.	Saur.	Gibbs.	Wrangell.	Sauer.	Gibbs.

* The Russian for knife is *Nozhik*.

ORARIAN.						
INNUIT.						TUSKI.
Kuskwógmūt.	Ekógmūt.	Unalígmūt.	Máhlemūt.	Kaviágmūt.	Greenlandic.	Chū'klūk-mūt.
Yūgut	Yūk	Yūt	E'nuk	E'nuk	Innūk	Yuk
Agnak	Ok'hanak	Ogh'anut	Ok'anok	On'g'nut	Arnak	Anak
Nūliga	Nūlikhuh	Nūliay'ka	Nūleéka	Nūleéga	Nūlia	Nūlikert
Tangiala-[vak	Tanigówil-[uk	.....	.....	.....	Merklitok[ak	Mogileraëk
Nozeachuk	.....	Pūneéghuh	Pūneéghuh	Pūneéghuh	Niviarsiar-	Annæchae
.....	On'g'iuk	Ong'iuk	Omáylik	Amáylik	.....	Emilek
Mik	Muk	'Muk	Im'mik	Immuk	Imek	Muk
Kanik-[shak	Un'yūk	Slachliktuk	Uphūn'	Kániktuk	Goviksoak	Kanig
Chiko	Chéekūk	Séko	Séko	Séko	Irosok	Chiggo
Chliaktuk	Ibizhúkh-[tuk	Igesikh'tuk	See-ulūk'tuk	Igwanūlūk	Kerpserluk	Nepchūg
Nouna	Nū'nuh	Nū'nneh	Nū'nneh	Nū'nneh	Nūna	Nūnna
.....	Tikestúk	Kegíkhtuk	Kíkhtuk	Kikhtak	Kichertak	Ketchet
Knik	Kanúk	'Knuk	Ik'nik	Iknuk	Ingnek	Klugg
Tūntū	Tūn'tūk	Tūn'tūk	Tūn'tūk	Tūn'tūk	Tūkto	Koinaik
Ikalouk	Nūkút	Ekót'lewit	Ikóthlewik	Ekóth'luk	Aulisigak	.....
Chivichuk[kuk	Chiwik	Chíwik	Chow'ik	Chíwik	Sowik	Chawik
Knūignag-	Asúkhtuk	Asíkhtok	Nakū'ruk	Nakū'ruk	Giksok	.....
Chakliuk[pak	Asseétuk	Aseétuk	Ashū'ruk	Asiūruk	Asseenar-[mik	.....
Ontouch-	On'g'ūk	On'g'uk	Ong'yruk	Ongydū'ruk	Angwok	.....
.....	Meékūk	Mi'kuk	Mikidū'ruk	Miksūrów-[ruk	Kutkiok	.....
Kikhcha-[tuk	.....	Kūtsū'ng'-[uk	Kūshūnguk	Kūshūng'uk	Kirsapok	.....
Pachnak	Níng'luk-[tuk	Kwikhtá-[nah	Allapáh	Allapáh	Niglek	.....
Hwihka	Hwih	Wúnga	Wúnga	Wúnga	Uanga	Goom
'Lpit	Ik'hl'wit	Ikh'lepit	Il'lewit	Il'lepit	Iblit	Goot
Taôuna	.....	Ū'na	Ū'na	U'na	Oma	En'kau
.....	Hwókah	Wah	Wah	Wah	Aak	Ee
.....	Peétuk	Peétuk	Peéchuk	*Peéluk	Nagga	Al'eah
Atauchik	Atówchuk	Atówsik	Atówsik	Atow'simuk	Atausek	Atchig
Malkhok	Mahlrū'kh	Málarūk	Málrūk †	Mahlrónik	Arlaek	Maelruk
Painaivak	Pingáien	Píngáiuk	Pinyusūt	Pinyusū'nik	Pingajuak	Pinai-ig
T'chamik	T'stámen	Sé'stámat	Sétemat	Stáminik	Sessumat	Stamoch
Talimik	Télemut	Télemat	Télemat	Telémūnik	Tellimat	Telimaet
Akhvinok	Agwínūleet	Ichúksut	Aghwínū-[leet	Aghwinū'li-[muk	Arbouek	Arvingt
Ainaäkhva-[nam	Maloodín-[ūlit	Malūksíp-[nūleet	Mahlūditaghwín'ūleet		Arlekh	Mararvingt
Pinaiviak	Pingánūlit	Pináiuksíp-[nūleet	Pinyusūnilaghwínūleet		Arbouek-[pinyusūt	Pingaivingt
Chtamiak-[vanam	Kūlínolit	Kúlinotýlit	Kóolinotý-[luk	.....	Kollimloet	Stamiluelig
Kullnuk	Kū'linak	Kolin	Koóleet	Koólinuk	Kollit	Koela
Baer.	Dall.	Dall.	Dall.	Dall.	Egede.	Hall (part).

* Same in both dialects. Substantive and adjective forms given.

† *Malrūk* (two, noun), *Mahlronik* (two of anything), *Ipar* or *Aipa* (a pair), often mixed in vocabularies.

STOCK.	INDIAN.					
FAMILY.	THLINKET.				(MIDDLE OR	
Tribe.	Kygáni.	Sítkakwan.	Stakhínkwan.	Yákūtat.	Ūgaléntsi.	Ahtená.
Man	Eetling	Kakh	Ka	Ka	Tagoan	T'keehl
Woman	I-adder	Shawath	Sháhwat	Shá-wut	Kaiyaht'hel	Shaat
Wife	I'tsar	Eeshel	Achshét	Siet	.....	.....
Boy	Eetlinga-[hutzo	Kissanee	Yetékw'	.....	.....	.....
Girl	Iadderhut-[zo	Shaat'k	Shaketsko	Kelikúts-[kuki	.....	.....
Chief	Itlagata	Ankaö	Ankówa	Kūmahete	Kūlyahaityeh	Kaskayuh
Water	Hunt'l	Hee-en	Hehn	Hein	Kahyah	T'ū-you
Snow	Towow	T'lait	Kleht	Ha-it	Het'l	Nataga
Ice	Kelk	Teeght	Teekh	Titz	Tetstch	T'ten
Rain	*Talla	Seév-va	Seewh	Seiw	Kūlyeh	Kyah-yan
Land	Klik	Ta-uk	Klatk'	Hittik	Tstcha	T'tstchesh
Island	Kwai	.....	Kat'h	Tzakutshū	.....	.....
Fire	Lannū	Tithkaan	K'hann	Kun	Takgak	T'khun
Deer	Kait	Keeahkan	Kohkan	Natllage	Hyanaya	Annahyeh
Fish	*Tseenah	Ahhaat	Tach	Haat	Tyahyehya	T'klukyai
Knife	*Kutkwan	H'leeta	Kleeta	Th'leita	.....	.....
Good	Lai	Akai	Yek-kéh	Kutzū-ūva	.....	.....
Bad	Tarner	Klaikoas-[kai	Klehtloosh-[keh	Kushiatū	.....	.....
Big	You-one	Atleen	Atkléhn	Aht'layn	Kūlaygeh	Talkhak
Little	Ehūdso	Akwitko	Yehkokeuk	Yakulkutz-[kū	Yakūtchkh	Talchū-[uneh
Hot	Hūnan	Tahal	Yettáh	Stehūvalia	Katïestïeh-[kokl	Noalkhun
Cold	Tut	Teetsaht	Coos'ah't	Coosa-aat	Koteetl'ka	Atl'lych
I	*Tée-a	Khat	Hutt	Khutak	Hoo-oo	Schi
You	*Tah-a	Mahyeh	Weh	Way-eh	Ih	Nenn
He, she, [*or* it	*Lah-a	Youta	Hooh	Yoota	.....	.....
Yes	*Aang	Aha	Ah	Ee	.....	.....
No	*Kum	Klekha	Klehk	Tikh	.....	.....
One	Squanson	Klaikh	Klehch	Tsatlayk	T'lkinkeh	S'tchelkai
Two	Stun	Taiegh	Téh-uch	Teé-ukh	Loatel	Natayakha
Three	Klunet	Nitgh	Nusk	Noutik	Tatlkoa	Taakeh
Four	Stansien	Tahkoon	Tahkóne	Tahkoán	Kalakakūya	Tinnki
Five	Klaith	Ketcheen	Kéechin	Kéchin	T'soaneh	Alcheni
Six	Klunitch	Klaitoosee	Kléhtoosha	Kleet-ho-[sho	Tsin	Kastaani
Seven	Sekwa	Taghatoo-[so	T'hútoosha	Tuhaatwo-[sho	Latetsin	Kontsegai
Eight	Stansioner	Nitghtatū-[so	Niskatoosha	Nututwo-[sho	Katetsin	T'kladenki
Nine	Klathsqu-[anson	Kooshak	Koshuku	Koshuk	Kūtkteh	T'klakoleh
Ten	Klath	Chinkat	Chinkat	Chinkaett	Yakakh	Plazha
Authority.	Gibbs.	Lisiansky.	Gibbs.	Gibbs.	Wrangell.	Wrangell.

* Skitagett village.

INDIAN.					
KÚTCHIN) TINNEH.			(WESTERN OR TÁNA) TINNEH.		
Kenáitená.	Tenán-kutch'in.	Kutchákutch'in.	Káiyuhkhatána* (Ulukuk).	Káiyukhatána (Northeastern).	Unakhatána.
Nushen	Tenáh	Tin'jee	Tenahyū'	Tenahyū'	Tenáh
Kissin	Soltánah	Trin'joh	Sultána	T'sult	Solt'án
.....	Ote	At	Ote	Ote	Ote
Ts'kanikna	Chulkóya	T'tsieah	Yukeeóza	Sak'hée	Keé-os
Keisenkooyah	Tenahkotlóh	Neechit	Kohtlyózah	.....	Soltanyoza
Keeshka	Tai-óne	Kah-kéh	Tyóne	Tyóne	Tyóne
Milni	Too	Chū	Too	Too	Too
Ingach	Yuh	Zah	N'ūtáhgah	Ntáūgah	Nūtáhgah
Mil-tnee	T'hūn	T'tūn	T'hun	Than	T'tun
Hl'koun	Tatl'chán	T'sin	At'khún	At'kúneh	At'khún
Alch-nin	N'nuh	Nun	.....	Noo	.....
.....	N'os	N'jūh	.....	.....	D'ash
Tahsi	K'hun	Ko	Tahkoóna	Tah'ūk'n'	K'hūn
Patchih	Mitzíkh	Vut-záih	Anóyah	Anoyh'	Mitzíkh
Lūka	H'lee-wéh	T'thluk	Neliyúh	Tht'kakh'	Mahmúh
Kyaki	Klahsíh	R'sih	Klahkadóna	T'kadóne	T'lahkadóna
Pohallen	Nezóon	Nirzíh	Neezoón	Nezroón	Nahzoón
Tsooheelta	Klahkáh	Nizikwáh	Tsatkláhka	Ts'talágha	T'soklához
Tigilnich	N'choh	Choh	N'koh	N'tsooh	N'koh
Talchih	N'sútloh	T'sul	Nookootsáh	Nookoójah	Nookatzáh
Aba	Honálkoh	Needhá	At'kleebáh	Honalikóh	Aleebúh
Th'kitchan	Kunikúh	Nih'-kudh	Azū'	Atzū'	Azū'
Schi	Utún	Sih	Sih	Sih	Sih
Nunn	Nun	Nun	N'neh	N'neh	N'neh
Ennun	Yohunnéh	Yahtun	M'mh'	M'mh'	M'm'uh
.....	Ah-háh	A-há	Hoh	Ah	Hoh
.....	N'tah-gáh	No-kwáh	N'tyahoh	N'tah	N'tahguh
Silki	Chethlukéh	Chithluk	Kaythlukéh	Kaythlukéh	Kaythluket
Ticha	Nahkehtih'	Nikai	Ntáy-keh	N'taykhneh	N'tayuhkeh
Touki	Tahgúh	Tie-ik	Tókah	Tókhneh	Tonkáh
Tinki	Tingáh	Tahng	Ténikeh	Tenikhneh	Tinkée
Tskiln	Ketudsinála	Cheetlukū'nli	Ketudnála	Kétsinala	Ketudsinála
Koutsini	Niketáhgah	Nihkeeti-iek	Tenankáyt-[luka	Tonankay-[thuket	Tonankáyth-[luket
Kintschougoni	Tahtsuntséh	Etsehdetsen-[ekai	Tenanotáy-[keh	Tonanotáy-[keh	Tonanotáyu-[keh
L'takouli	Neketúngkeh	Nikeetang	Niltadinkéh	Tl'kád'nkay	Nihkádinkeh
Lgitschitchou	Mintsuhtl	Menchudneh-[kókwa	Kaytlukukúl-[la	Nikoznála-[kaythluk-[ehkúlla	Kaythluket-[kúlyeh
Kli-oujoun	Chilodelták	Chithlúkcho-[tein	Nikognálah	Nikoznarlta	Neekoznála
Wrangell.	Dall.	Kennicott.	Dall.	Dall.	Dall.

* The Ulukuk and northeastern Ingaliks are among the most widely separated branches of that great tribe. The latter live near the mouth of the Tananah River.

COMPARATIVE VOCABULARY OF EAST SIBERIAN TRIBES.

ENGLISH.	CHUKCHEE.	YUKAGIR.	KAMSHADALE.	TUNGOOSE.	YAKUT.
Authority.	Stimpson & Hall.	Saur.	Saur.	Saur.	Saur.
Man	Ke-lowl-tee	Toromma	Uskaams	Bey	Kissœ
Woman	Na-ooís-kun	.....	.....	.....	.....
Boy	Nin-kai-kai	Luhundæ	Pahatsh	.....	Ogo
Girl	Ni-okūk-ka	Váiendéndi	Ch-tshitshoo	Choorkan	Keesa
Infant	Nin-nái-mūkka	Lukoolu	Pahatshitsh	Kootian	Kutuogo
My Father	*En-pan-áskin*	Etchèa	Is-ch	Amai	Agam
My Mother	*En-panów*	Amea	Naz-ch	Eni	Iya
Husband	*Onowrinkalow*	Yādoo	Skoch	Edee	Crim
Wife	Komningnoak	Alwáley	Squa-aw	Akee	Yaghtarim
My Son	*Núnki*	Antoo	Pa-atsh	.....	Oal
Daughter	*Howokukah*	Marhloo	Sooguing	Ghoorkan	Keesim
My Brother	*Eshamatúnga*	Tshatsha	K'tshidzshi	Akan	Oobagim
My Sister	*Saketúnga*	Pawa	Kos-choo	Ekin	Agasim
People	Tsūts-tsin	Ommo	Quaskoo	Beyil	Omung
Head	*Láhwoot*	Iok	T'choosa	Del	Bass
Hair	Keru-gwee-te	Manalláe	Koobit	Nioorit	Assim
Face	Loel-kun	Neatsha	Qua-agh	Itti	Sirai
Forehead	*Kai-il*	I-oanguitshel	Tshilgua	Omkat	Sūis
Ear	We-loot	Oonomma	E-ew ; e-ewt	Korot	Kugach
Eye	Dil-yáte	Angzsha	Nannit	.....	Kasak
Nose	Yukah	Iongul	Kaangkaang	Ogot	Mooron
Mouth	Ekūruge	Angá	Kuz-ha	Amga	Aiyach
Tongue	Eleel	Onnor	Nutshel	Enga	Till
Teeth	Retinta	Tòdy [bi	Kuppet	Itsh	Tees
Beard	Aalute	Angénbugūel-	K'ko-ookat	Tshurkan	Buitik
Neck	Aetin	Jomūel	Hitle	Mivon	Moinung
Arm	Menyeet	Núngean	Settoo	.....	Illi
Hand	Guer-eelte	Nugán	Settoo	Gal	.....
Fingers	Rylyet	Pe-enditsha	P'koida	Kabr	.....
Nails	Wer-oot	Onz-shil	Ko-uda	Osta	Tiugrach
Body	My-sho	Tshul	Inga'ták	.....	Ettim
Leg	Oet-got	.....	.....	.....	.....
Foot	Yer-oot	Noel	Th-quatshoo	Boodel	Attach
Toes	Kah-oo-note	.....	.....	.....	.....
Bone	*Ahtam*	Ámun	T'hamtshoo	Isni	Umok
Heart	Leel-ge	Tshóoenzsha	Nókguek	Mewan	Surach
Blood	Pao-kooroogin	Liōpkul	Mésson	Soogial	Ghan
Chief	Hérem	Alnindsha	.....	.....	Toyon
Friend	*Tungetung*	Aghéma	Kallal	.....	Doghor
House	Yaránga	Numa	Kisut	Dzsho	Balagan
Kettle	Koo-keng-oo	.....	Kukua	.....	.....
Arrow	May-ar-kum	.....	.....	.....	.....
Axe	Ad-doo-at	Noomundzshi	Kvasqua	Tabor	Sugai
Knife	Wáal-ye	Tshagoia	Watshoo	.....	Busak ; buhak
Canoe [(boat)	Kai-é-wyte	Aktshel	.....	.....	Bat
Shoes [(boot)	Gráskut	.....	.....	.....	.....
Sky	Aa-yuk	Kundshu	Kochan	Gioolbka	Chattan
Sun	Tee-re-kee	Jelónsha	Qua-atsh	Nultian	Kuin
Moon	Yeel-gin	Kininsha	.....	Begh	Ooi

ENGLISH.	CHUKCHEE.	YUKAGIR.	KAMSHADALE.	TUNGOOSE.	YAKUT.
Authority.	Stimpson & Hall.	Saur.	Saur.	Saur.	Saur.
Star	Enger-tee	Lerungundshia	.....	Osikat	Solus
Day	*E'-nah*	Pondshirka	.....	Ining	Kuin
Night	*Minkum*	Emmel	Kolkwa	Golban	Tuin
Light	.....	Pondshirka	.....	.....	Sirdik
Darkness	.....	Emmitsh	.....	.....	Kharanga
Morning	*E'gei-oy*	Unhaiel	.....	Tek	Erdee
Evening	.....	Poinjuletsk	.....	Moorak	Ke-esse
Spring	.....	Pora	.....	.....	Saas
Summer	*Aldruin*	Puga	.....	Anganal	Sacin ; soyin
Autumn	.....	Nada	.....	.....	Kuissan ; kui-
Winter	*La-ldmdrole*	Zshendsha	.....	.....	Kisun [san
Wind	*Yóego*	Illejénnie	.....	.....	Tyil
Thunder	Eél-kow-wow	I-endu	.....	Ashdoo	Eting
Lightning	Yenka-ga-ka	Borongille	.....	Tapkitan	Tshagilgan
Rain	Pee-na-gee	Tiba	Tshukatshoo	Oodan	Samir
Snow	I-lýle	Pukoelli	.....	Imandra	Char
Hail	.....	Jarchandiva	.....	Bota	Tollon
Fire	Pennulia	Lotshel	Pangitsh	.....	O-at
Water	Lee-me-oo-nut	Ondzshi	Ee-ee ; i-i	Moo	Oo
Ice	Tin-tin	Iārka	.....	Bookus	Boos
The Earth	Utéska	.....	.....	.....	.....
Land	Yérigen	Levje	Symt	Tor	Sirr
Sea	Ta-oo-tee	Tshobul	Ningl	Nam	Baighal
River	Way-am	Onnong	.....	Okat	Yrris
Lake	*Geétkin*	Jalgyl	.....	.....	Koel
Valley	*Luwúgin*	Pondshórkoni	.....	.....	Chodu sasir
Hill, mountain	Nup-per-am	Péa	Aal	.....	Seer
Island	*Etloer*	Ommul	Samatsh	.....	Arre
Stone	Wóo-kwin	Péa	.....	Dzshool	Taas
Salt	*Tūū-tah*	Logodunshinu	Pepum	Tak	Tus
Iron	Kelgwit'	Lundul	Quatshoo	.....	Timur
Tree	.....	Tshall	.....	.....	Mass
Wood	Oó-te	.....	.....	.....	.....
Leaf	*Wee-weer*	Paldshitsha	.....	Ebdernia	Seberdak
Bark	Oo-til'-yeet	Tsangar	.....	Oorta	Chatteuk
Grass	Wa-utch	Oolega	.....	.....	.....
Flesh, meat	*Tukiskin*	Et	T'hāltal	Oolra	.....
Dog	Hyd-tydt	Tababa	Kossa	Nin	It
Bear	Kai-ing-ha	.....	Kasa	.....	.....
Wolf	.....	.....	.....	.....	.....
Fly	.....	Nilendoma	Quamotih	.....	Zachsirga
Egg	.....	Nontondaul	N'gach	Oomta	Simmit
Feathers	*Walgalángin*	Pugelbi	.....	Detle	Charungatshæ
Duck	.....	Ondzshinonda	Alshingush	Neki	.....
Fish	Een-a	Annil	Etshoo	Olra	Balyk
Name	.....	Nevĕ	Hágaach	Gerbin	Aatta
White	Neel-yuk-ki-[ing	Po-innei	Attagho	Geltadi	Irungk
Black	Noo-ki-ing	Aimáivi	.....	.....	Chara
Red	Sha-lúk-ki-ing	Kelenni	Tshaang	Koolani	Kasil
Blue	*Shaywaírow*	Lubanzshanni	.....	.....	Keochtinoo
Yellow	*Payūta-tá-lin*	Tshakolonni	.....	.....	Keoch
Green	.....	Tshakolonni	Nochsonne	Tshulban	Keoch
Great	Nimiyen'ki	Tshomoi	.....	Ekzsham	Oolachan
Small	*Pūlukin*	Lukun	.....	Nukishoo-	Kutshugai
Strong	*Ar-ahmásin*	Addi	.....	.... [kan	Kittinach
Old	Étke	.....	.....	Sagdi	.....
Good	Ma-chin'-ka	.....	.....	.....	.....

English.	Chukchee.	Yukagir.	Kamshadale.	Tungoose.	Yakut.
Authority.	Stimpson & Hall.	Saur.	Saur.	Saur.	Saur.
Bad	*Át-kin*	.....	Adkang	.....	.....
Cold	Tuk-i-yū'-yūrk	Pondzshetsh	.....	Iguin	Timnee
Warm	*Omo*	Pugatsh	.....	Ghochsin	Ettegas
I	Ichem	Matak	Komma	Bee	Min
Thou	Tūa	Tat	Kiz	Boo	En
He	*En'kan*	Tundal	.....	Nongenatshe	Ginne
We	.....	Mitek	.....	Nonganoobe	Buissiga
Ye	*Gar-out'*	Titlak	.....	Ellia	Issige
To-day	*Ennaí*	Pondzshirko-[ma	Daangoo	.....	Begun
Yesterday	*Ié-win*	Nengandshé	Aati	.....	Beghassæ
To-morrow	Er'-go-let	Ongóiē	Bokuan	.....	Sarsin
Yes	Sow-soo ; i.	Tat	La	Ya	Ak ; ah ; eh.
No	Ta-ap	Oiley	Iski	Atcha	Soch
One	En'-ge ; níra	Irken	Kemmis	Oomun	Bir
Two	Meér-er	Antachlon	Nittanoo	Dzshur	Ikke
Three	Oo-dóke	Iālon	Tshusquat	Elan	Ews
Four	Ger-ar'k	Iēlahton	Tsaascha	Digon	Tirt
Five	Midle-din'ge	Enganlon	Koomdas	Tongon	Bes
Six	Nam-te	Malghialon	Kilkoas	Kilkok	Alta
Seven	Yeranrt-ting	Purchion	Ittachtenu	Etgatanok	Setti
Eight	One-asink	Malghialach-[lon	Tshoktenu	Tshokotenok	Ogos
Nine	.....	Chuniirki-eł-[lendzshien	Tshaktanak	Tshakatenok	Tagos
Ten	Men-eét-ke	Kuni-ella	Komtook	Tshomkotak	On
Twenty	.....	Attachongo-[niella	Kaskumtuker	Katshat-ko-[tako	Surbey
Eating	Mun-kom-it-too	Langdal (ate)	.....	.....	Assiben
Drinking	Mun-ee-quee	Ondzshok	.....	Koldakoo	Issiem
To run	Mun-kitchen-ta	Tshuenzshi	Kaschiatsh	.....	Suir
To dance	Mun-ee-do-dite	Longdok	K'hogdasitch	.....	Inkullæ
To sing	Men-tee-pa-ga	Jagtak	K'tsheem-[gutsh	.....	Toy
Sleep	Min-yil'-ki	Iunzshuk	.....	Ookladai	Oomkella (to [sleep, tui)
To speak	Mun-tow-tow-a	Aniak	Kahalkan	.....	Ittare (speak, [kapsir)
To see	Mun-ee-leer-pit-[ko	Umat	Kwatshqui-[kotsh	.....	Unar, koer
To kill	Mun-tin-pit-ko	.....	.....	.....	.....
To sit	Min-wá-ko-mo	.....	.....	.....	.....
To stand	*Kal-kūtkwin*	Ong-hak	Kasichtshitsh	.....	Tur
To go	*Kanto-ah*	Ingherghodak	Kowisitsh	Choorli	Bar
To come	Kai-et'-ki	.....	Koquasitsh	.....	.....

The Chukchee vocabulary, due to the kindness of George Gibbs, Esq., was collected on the Ringgold and Rodgers' Exploring Expedition by Dr. William Stimpson, Director of the Chicago Academy of Sciences, and has not hitherto been published. Those words in italics are from a vocabulary kindly obtained by Prof. Asaph Hall of the U. S. Eclipse Expedition in 1869, at Plover Bay. The remainder are by Saur from Billings's Expedition, a rare and inaccessible work. I have introduced them here for the convenience of the philologist who may wish to compare the languages of Eastern Siberia with those of Western America; and also for the benefit of the American traders who may visit the coasts of Northern Kamchatka, the Ochótsk Sea, and the Chukchee peninsula.

WORDS TOWARD VOCABULARIES OF THE WESTERN ESQUIMAUX DIALECTS.

English.	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágemūt.*	*Chugáchigmūt.*	*Kuskwógmūt.*
Arm	Tákhlik	Táleet	Táluk	Téleghuh	.....	Yagatsūtik
Accouchement	.....	.....	Iringh'uruk	.....	.....	.....
Arrow	Khot	.....	Kagahrít	Kagahrit	H'hūt	Ikhūk
Arms	Táh'kuh	Etuk	Ituk	Etuk	.....	(Angry, Iknitsūk)
Axe	Kolkab'ūk	.....	Kol'hábuk	Kolhabuk	.....	Kalkának
Autumn	Ooksŭ'k	.....	.....	.....	.....	.....
Aurora	Igóghi-uk	.....	.....	.....	Kikhūyet	.....
Ashes	Aghŭ'k	.....	.....	.....	.....	Asak
Another (other)	Eéminah	.....	.....	.....	.....	.....
Alive	Tūkūneríkhtuk	.....	.....	.....	.....	Oonūevak
Afraid	.....	Alínga	Irigée	Alínokh	.....	Alantak
All	Keémi	Kissim'mi	Kissim'mi	Kissim'mi	.....	.....
Brother	King'úkshuk	Oónuguh	Arpéeughuh	Ung'ówrughuh	.....	Annak
Bear	Takókuk	Tokóguh	O'kiluk	O'kluk	Laklak	Oonūvaliakh
Beaver	Malúktok	Palúktuk	Polóktuk	Palúkhtuk	'Stneek	Kinyūli
By and by	Atáta	Atáko	Atáta	Nūnáko	.....	(Bay, Nanaenak)
Boat (skin)	On'g'iuk	Un'g'iruk	Oómiak	Oómiak	.....	Anyak
Boots (deerskin)	Kamū'uk	Kúmguk	Kámuk	Kámuk	Natasiakuak ?	Kamiksak
Beluga	Stū'-uk	'Tókuk	Seésūuk	Seétūuk	.....	Ootvak
Buy (to)	Keepū'chūwuk	.....	Tówksik	.....	.....	Kepūziyū
Bring (to)	Tízhū	Tízhū	Kízū	Kízū	.....	Tijskiū
Bones	Nunokút	Nunówrunguk	Sównerit	Sownerit	.....	(Bank, Ts'na)
Blood	Owk	Owk	Owk	Owk	Owk	Kayūkak
Bad	Asseétuk	Asseétuk	Ashū'ruk	Aseéūruk	.....	Chakhliūk
Boy	Tanigówiluk	Illégah	Illigat	Illeégat	.....	Tangialūvak
Beard	Oóngut	.....	Oómeet	Oomit	.....	Oonik
Bullet	Koh	.....	Kagáhrūk	Kahgáhrūk	.....	(Brave, Tūgak)
Belly	Oksŭ'k	.....	.....	.....	.....	Aksiak
Black	Tū'ng'ūlera	.....	Taksibúk	.....	Tapnikhtuk	(Below, At'chimi)
Bag	Stamazū'tika	.....	.....	.....	.....	.....
Be still	Konílorino	.....	.....	.....	.....	(Before, Chūnimtpih)
Break (to)	Chíkumuk	.....	Naweéktuk	Narweétuk	.....	(Behind, Kanūlklimtiū)
Back (the)	P'koke	.....	.....	.....	.....	.....
Backbone	Inarútmuk	.....	.....	Narū'tiguh	.....	.....

English.	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchig-mūt.*	*Kuskwóg-mūt.*
Belt	Kappazhū'-[tika	.....	Topsih	Topsih	.....	.....
Body (the)	Kotigunka	.....	.....	.....	.....	.....
Blanket	Oolik	.....	Ooliet	Oolit	.....	.....
Bed	Atlékhka	.....	.....	.....	.....	.....
Bow	Ookelúbuk	.....	Peshgik'-[shih	.....	.....	.....
Beads	Chū'ng'i	Shungów-[rik	Chimówrik	Chung'ów-[ruk	.....	(Blue, [Vetok)
" (small)	.....	.....	Kawilsak	.....	.....	Tikhlit
Boil (to)	Kokhlátuk	.....	.....	.....	.....	Chūnazū
Birch (wood [or bark)	.....	.....	Ogigityuk	.....	.....	Illenūk
Breeches	Kūkhlik	.....	Kákolik	Kákhlik	.....	.....
Bird	.....	Ting'myuk	Ting'myuk	Tíng'myuk	Oonūshak	Tinmyak
Breasts	.....	.....	Méelūk	.....	.....	Nūkhtkūtit
Bark (of tree)	.....	Ahméelū-[ruk	.....	.....	.....	.....
Burn (to)	.....	.....	Nutiktuk	.....	.....	.....
Berries	.....	Ákpik	.....	Ákpik	.....	Nangat
Carcajou	.....	Kúftsik	Káhwik	Kahwik	(Clouds, [Ámedl'-gok)	(Clouds, [Taligūk)
Cache	Kágit	Mūm'teguk	Shekhíliuk	Mū'pteguk	(Copper, [Kanūgak)	(Copper, [Kanūkh)
Contog	.....	Kanták	Pūhūtuk	Pūhūtuk	.....	(Calm, [Kūnik)
Cry (to)	.....	Kuziáme	Kiūrūng'er	Kiūrūng'er	.....	(Current, [Chagvak)
Come (imp.)	.....	Tiyuk	Kághi	Titi	Tigūt	Tikina
Coming	.....	Ki'-yūk	Kíaruk	.....	.....	(Coal, [Kumavit)
Come in	.....	.....	Eneséhtuk	.....	.....	(Cup, [Walyūk)
Cut (to)	.....	.....	Keepéegah	.....	.....	Pilyakhū
Cap	Nat'chúk	Nasóta	Nashuk	Nashuk	.....	Nachak
Chin	.....	Tamilū	.....	.....	.....	(Cousin, [Tūnka)
Caps (gun)	.....	.....	Kábūlon	.....	.....	(Castor, [Alyūki-takhk)
Comb	Nūhyáwūtut	.....	Illyáhutik	.....	.....	(Crane, [Kinatūli)
Chain (small)	.....	.....	Kalímurik	.....	.....	.....
Chief	On'g'iuk	Amáylik	Omáylik	Omáylik	Angaizū-[gok	(Clay, [Maga'yuk)
Cold	Níngluktūk	Kwikhtána	Allapáh	Allapáh	Apakhtok	Pignakhtok
Chew (to)	Tamaluk	.....	.....	.....	.....	(Cowardly [Alantak)
Daughter	Ikhinúk	Puneéghuh	Puneéghuh	Puneéghuh	Panja	Panagha
Dog	Ki'tmuk	Kímukhter	Kiyúkmuk	Kiyúkmuk	Pee-ūkhta	Annakhúk-[kta
Deer (rein-)	Tū'ntūk	Tū'ntūk	Tū'ntūk	Tū'ntūk	Kána-et	Tū'ntū
Day	Okhtuk	Oonákūni	Ooblámi	Ooblámi	Achnik	Eeghnik
Day (yester-)	Ikpukzuk	Ukwówuk	Ikhpúkhe-[ruk	Ikhpúkhe-[ruk	.....	.....
Day (to-)	Ooblūk	Oghanúkh-[puk	Oóblūbuk	Ooblūmée-[ni	.....	.....

English.	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchig-mūt.*	*Kuskwóg-mūt.*
Day (next)	.....	Oonáka	Ooblū'kuk	Ooblákū	.....	.....
Deerfat	.....	Tū'nūk	Kównuk	Kównuk	.....	.....
Door	An'mik	Tálo	Táluk	Táluk	.....	(Deep, [Tūli
Dance	Poëlū'hrit	Poëléhruk	Poëléhruk	Poëléhruk	.....	Kaziachi-[kūn
Drum	Chówyut	Kilyū	.....	Kilyūkuk	.....	.....
Don't know [(I)	Nutlóka	Kióme	Kiónee	Kiómé	.....	(Don't want [Pee-ukh-[naktūa)
Drill [(cotton)	Newát'chi-[muk	Ogikhluk	.....	Agikhluk	.....	.....
Duck	Ooksū'ktuk	.....	.....	.....	.....	Tinmik
Dead	Tūkū'leruk	.....	Tūkórik	Tūkórik	.....	Tūkūmak
Drink (to)	Yūktuk	Muksū'k-[tuk	.....	Immurúkh-[tuk	.....	Meekha
Darkness	Oonúk	.....	Dawktūk	.....	.....	Talkh
Dance-[house	Kághi	.....	Kaguskeé-[me	Kaguskeé-[me	.....	Akūmea-[vak
Drunk	.....	.....	Emiktūk	Emiktūk	.....	.....
"Dead" [drunk	.....	.....	Keemik-[shóktuk	.....	.....	.....
Day before [yesterday	.....	.....	Oonalágeni	.....	.....	.....
Eat (to)	Tamáluk, [Nū'guh	Nū'khwah	Nugerū'n-[ger	Nūgerūn'g-[er	Petoghdl'-[yūda	Neega
Eye	Eékhka	Eékhka	Isik	Eereégah	Eengaliak	Wetatik
Ears	Cheeudik	Shéetik	Shée'ūn	Séetiga	Chūtik	Chū-ūtik
Eyebrows	Kumnkayá-	.....	Kabūlot	Kabūloot	(Eagle,	Kayagmi-
[and lashes	[nuk				[Kotskalak)	[ūt
Enough	Tah'wútun'	Tahwátli	Tatnéedli	Timunìlli	(East, [Oonadl'-[gatak)	.....
Egg	Múnyit	Manit	Mūnik	Múnyit	.....	Tūkūkakh
End (the)	.....	.....	Éshoah	.....	.....	(Ear-rings, [Aklatit)
Evil Spirit	.....	.....	Pesū'ktah	.....	Katlagak	.....
Enceinte	.....	.....	Ching'iág-[harūk	.....	.....	(Eagle, [Nitigovak)
Earth	Nū'nuh	Nū'na	Nūneh	Nū'nuh	Nū'nuh	Nūni
Ermine	Cheekeet	.....	.....	Chíkarik	.....	Pagūlgak
Father	Átakah	Átahkah	Arpúgah	Atátaghuh	Attaga	Attū
Fox (red)	Kamy'úk	Kúviuk	Kiyúktuk	Kiyúktuk	Ka-ūkhgak	Kavyachak
Fire	Kanúk	K'nuk	Ik'nik	I'knuk	Knakhk	Knik
Fat (deer)	Ookūk	Tūnūk	Kównuk	Kównuk	Oghok	Anignakh
Flint-and-[steel	.....	K'ne	I'kne	I'kne	.....	.....
Forget (to)	.....	Oowúkhter	Péuktūng-[er	Póyuk-[tūnger	.....	.....
Forgot (I)	.....	Oowúkhtuk	Peúkhtuk	Poyúktuk	.....	.....
Feet	Eetigúnka	Eeteegún-[ka	Itkúnka	Itūgúnka	.....	.....
Fingers	S'támen	Ewáhgun-[ka	Inūwútgha	Inūwútgha	Shwo-ahi	Swogat
Finished	Tahwútun'	Tátnah	Inyéktuk	Timunílli	.....	Tawatik
Fish	Nūkut	Ekót'lewit	Ikóthlewik	Ekóth'luk	Egakhlūk	Ikalouk
Face	Keénuk	Keénuk	Keényūk	Keényuk	.....	.....

English.	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchigmūt.*	*Kuskwógmūt.*
Forefinger	.....	Táhkok	.....	.....	.....	(Black fox, [Tūnūlgit)
Second do.	.....	Ahkólinak	.....	.....	.....	(Blue fox, [Ikhnikhtū-[ya)
Third do.	.....	Ekéelipak	.....	.....	.....	(White fox, [Oolegik)
Finger [(little)	.....	Ekit'hl'kuk	.....	.....	.....	(Fox cub, [Peyagak)
Fawn (rein-[deer)	.....	.....	Nokwiok	.....	.....	(Fresh, [Nūtákapak)
Far off	Yaksíkh-[tuk	Oonasík-[suk	Oonaseé-[shuk	Oonasik-[shuk	.....	.....
Foot (one)	.....	Éshegeet	Itigi	As'higeet	.....	Igūk
Feather	.....	.....	Shū'lūk	.....	.....	(Fish net, [Kūgya)
Frozen	Komlóko-[wuk	.....	.....	.....	.....	Niklikhtok
Fish [(salmon)	Takhiyúk-[puk	.....	Takiyúk-[puk	Takyúkh-[puk	.....	Tagiakvak
Fish [(small)	Nūtágut	.....	.....	.....	.....	(Fish trap, [Talpyahk-[nyat)
Fat (very)	Ookílera	.....	.....	.....	.....	(Fly, a [Chūyūvat)
Frightened	Alíngū	.....	.....	.....	.....	.....
Grouse [(white)	Okúziguk	Arkazi'gi-[uk	Arkáziuk	Arkaziuk	.....	.....
Gloves	A'zigak	A'gzigite	A'regat	Ásigat	.....	.....
Gun	.....	Shūkpun	Shūkpun	Shūpun	.....	.....
Go (I)	I'óktuk	Iákhtok	Olóktuk	Chanúksūk	.....	Eékhchika
Gift	.....	Chikeeka	Cheekée-[kha	Cheekée-[kha	.....	(Grandfather, [Apnūgliūk)
Good by	Tawi'hūeh	.....	Owlóktut	.....	.....	(G'ndmother, [Annūgliyū)
Good	Asúkhtuk	Asíkhtok	Nakū'ruk	Nakū'ruk	.....	Knuignagkūk
Good [(very)	.....	Nakūrū-[rúmuk	Areegáh	Areegáh	.....	.....
Girl	Okanóki-[muk	Puneéghuh	Agnishuk	Puneéghuh	.....	Nozeätchuk
Give (me)	Tizhū-[wun'ganuk	.....	I'chūlúnga	.....	.....	Yagūzhgū
Go (away, [imp.)	Ayée	Anée	Annisók-[tuk	Anée	.....	Ayagū
Gun nipple	.....	.....	Molū'ruk	.....	.....	.....
Grass (dry)	Wūkut	Ih'gut	I'inikhserit	Pinikherit	Keyak	Chan'git
Give (to)	Peekee-[tumka	.....	Aychilúnga	Aychilunga	.....	.....
Goose	Tin'g'um-[yuk	Ting'myuk	I'íngmyuk	Tíngmyuk	Ting'amet	.....
Grave [(burial [place)	Kūn'g'ūk	.....	.....	.....	.....	.....
Get up !	.....	Mukéeta	Mukéetin	Mukéeter	Mukt'n	.....
Hands	Ikunka	Aregút-[ghuh	Aregút-[ghuh	Aregútguh	.....	Yahguchūtik

English.	*Ekógmūt.*	*Unalig'mūt.*	*Mâhlemūt.*	*Kaviâgmūt.*	*Chugáchig-mūt.*	*Kuskwógmūt.*
Hare	.....	Kiyū'kth- [lūk	Oókulik	Oókulik	.....	(Hawk, Nap- [tak)
Hungry [(to be)	Nugi-úkh- [tung'	(I am) [Nuhgee	Nūgashūk- [túnga	Nū-iyih	.....	(How much? [Kahitūgat)
Head	Nashkók	Nuskógwa	Nahkówa	Neükówah	Nash-kwa	.....
Here	Marni	Marni	Marni	Marni	.....	Honikho, [Khwahna
Hot	.....	Kūtzūng'- [uk	Kūshū'ng'- [uk	Kūshū'ng- [uh	Magakhtok	Kikhchatuk
Hill (a)	Ing'reet	.....	Irgut	.....	Hatch or [opening, [Oolmyak	(Heat, [Kaltok)
Hand (one)	Dū'mak [(palm)	I'hee-it	A'zieghih	A'zeégih	Aicha	(Hill, Ingak)
Hair (long)	Nū'yut	.....	Nū'shak	Nūshak	Nūsha	Nūyat
Heavy	.....	Kūhū'*	Okamý- [chuk	Okamý- [chuk	.....	High Yukh- [tūli
Hair (short, [or fur)	Mulkút	.....	Mikseet	Mikseet	.....	Milkūt
Hat, or [head- [cover	.....	.....	Nahshū'n	Nashown	.....	(Hatch or [opening, [Oogliūvik)
He	Oona	Oona	Oona	Oona	Oom	Ikūm, Ta-ūna
Hammer	.....	.....	Kaksutók	.....	.....	(Hail, Kak- [hutat)
Husband	On'g'ūn	.....	.....	.....	.....	Weena
House [(native, [winter)	N'nuh	N'nuh	Tópek	In'nuh	T'na	Ina
Hear (imp.)	Neechee- [wū'nikin	.....	.....	.....	.....	(Him, Oo- [min)
His	Emūluh	.....	.....	.....	.....	Oomnia
I	Hwik	Wúnga	Wúnga	Wúnga	Kū-ih	Hwana, [Hwihka
Ice	Cheékuk	Seko	Seko	Séko	Cháguk	Chiko
Iron	.....	.....	Iknúgūwit	.....	Nakhtūlek	Nilkhagak
Indian (an)	Attówch	.....	U'ng'ūleet	.....	.....	(Inlet, Ikakh)
Island	Tikestúk	Kegíkhtuk	Kikh'tuk	Kikhtak	.....	(It is, Pe- [tankhtok)
Idle	Ksálera	.....	Erihe-shuk- [tū'nga	.....	.....	.....
Intestines	Keétunka	.....	.....	.....	.....	Ezhigliyūk
Jump (to)	.....	.....	Matlúkhter	.....	.....	.....
Knife [(clasp)	Chowic'hi- [muk	.....	Peeknúk- [tok	.....	.....	.....
Knees	.....	Seesgów- [kah	Sitgówa	Sitgowa	.....	.....
Know (to)	.....	Netoka	Tūshir'ūga	Nalū'kiga	.....	.....
Know (I)	Nachunle- [réetuk	.....	Tūshírūkh	.....	.....	.....
Know (I [do not)	.....	Snikha'hì- [tuk	Kamukala	Snikha'hí- [tuk	.....	.....
Kyak [(bidarka)	.....	Kyak	Kyak	Kyak	Kyak	Kahyak

* An asterisk (*) indicates a possible derivation from the Russian or some other language.

English.	*Ekógmūt.*	*Unatig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchig-mūt.*	*Kuskwógmūt.*
Kayak (3 holed)	.....	.....	Bidarli-[mýa	.....	.....	(Kettle, Gan-[chavak)
Knife [(sheath)	Chíwik	Chíwik	Chówik	Chíwik	Nowgū-[chak*	Oolvak and [Chivichuk
Kettle	G'hun	.....	.....	.....	.....	(Kamlayka, [Imukhna-[tikh)
Kill (I)	Tūkūcheé-[okuk	.....	.....	.....	.....	(To kill) [Chikalizgyū
Long ago	.....	Akwowów-[ghne	Ikhpukhe-[ruk-g'ale-[ükne	.....	.....	(Low, Yūkh-[kalnaūak)
Laugh (to)	.....	.....	Igiluk-[tū'nga	Igiluk-[tū'nga	.....	Ninliakhta
Legs	Erūkha	Erū'khga	Nee-ū'gha	Nee-ūgha	.....	(Lonely, Nū-[nanitūh)
Large	Ong'ūk	On'g'uk	On'g'yruk	Ong'ydū'-[ruk	Anishkak	Ontouchpak
Lie (to)	Aklóghtut	Iklū'ten	Shūgalū'-[rūten	Shūgalū'-[rūten	.....	Ikliūk
Land	Nū'nuh	Nū'nneh	Nū'naeh	Nū'nuh	Nóuna	Noúna
Light (not [dark)	Tankíkh-[tuk	.....	.....	.....	(Lightning, [Knukh)	Tankikh'ch-[tūk
Lake	Nanimúk	.....	.....	.....	Nannokh	Nanvik
Like (simi-[lar)	Iyūka	Mukū'chi-[muk	Amutna-[símuk	Amútna	.....	.....
Like (to)	Chang'wóh	Keenkūka	.....	.....	.....	(Long, Tat-[khlih)
Lie down [(to)	Enókhtuk	.....	.....	.....	.....	(Lightning, [King'vak)
Lips	Kánkah	.....	.....	.....	.....	(Losh, Man-[agnat)
Light (not [heavy)	Ookarmite-[náratuk	.....	Kowmarì-[tuk	.....	.....	(Lead, Khoy-[akak)
Lamp (oil)	.....	Nūnitikh	Náhnuk	.....	.....	(Little, Ikhi-[tūt)
Loon	.....	Tū-élik	.....	.....	.....	.....
Mother	Ahkúk	Ah'kah-[ghuh	Ah'kee-[ghuh	Ah'kee'uh	Anneh	Annih
Man (one)	Yūt (or) [Shūk	Yūt	Inn'uk	Enúk	Nūglūkhpi-[uk	Yū'gut
Mink	Magmū'tic	Emugemū'-[tukchuk	Tughiúk-[puk	Emagemū'-[tukshuk	.....	Amagmūtak
Moon	Aghi-áluk	Igháluk	Tátkuk	Tákuk	Taankuk	Tang'uk
Mittens	Arektwik	Arétfigh	Artkútik	Arkatúk	.....	(Mouse, [Ahwilnat)
Mouth	.....	Káhnuk	Kon'ogha	Kátkuk	Kanga	Kanuk, (Pahi, [of rivers)
More	Chílee	T'selli	Sūli	Sūli	.....	Chali
Much	.....	Omathlók-[tuk	Omalóktuk	Omilarókh-[tuk	.....	Amilikhtūk
Man [(people)	In'nyūet	'Yūet	In'nūet	In'nūet	Nūgulpéuk [(2 men)	Nūkalnyak
Mirror	.....	.....	Tagáktū	Tagiúkh	.....	Tangiūgūk
Morning	Oonmá-[kum	.....	.....	.....	.....	(Month, Tan-[g'ak)
Mine	Hwih'pi-[kuk	.....	.....	Wun'gukh	.....	(How much, [Kahitūgat)

English.	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchigmūt.*	*Kuskwógmūt.*
Meat [(flesh)	Kúmmuk	.....	.....	.....	Kumik	Ahūlkhūk
Marmot [(*S. Parryi*)	Cheékeet	Chéekik	Chíkarik	Cheékeek	.....	Kalganakh-[tūli
Mosquito	Muhko-kih'	.....	.....	.....	.....	Mikūghuk
Make (to)	Choweeze-[rukhli	.....	Chowéetuk	Choweetuk	.....	(Fossil Mam-[moth, Cha-[gūnik)
Moss	Ogh'wo	.....	.....	.....	.....	Kūmagitit
Me	.....	.....	.....	.....	.....	Kwinūk
Name (a)	.....	.....	.....	At'kah	.....	.....
Nose	Kan'úk	King'ow'-[cha	Kin'g'uk	King'ógha	Kinga	.....
New	Nūtákuk	Nūták	Nūták	Nūtak	.....	.....
Night	Oónuk	Oonūkh'-[tuk	Oonūk'tuk	Oonūk'tūk	Oonūk-[hakh	Oonūk
No	Péetuk	Peétuk	Peéchuk	Peéluk	.....	Chashítuk
Nails (fin-[ger & toe)	Stūkuh	.....	.....	.....	.....	(Net, Kūgy-[ah)
Never [mind	.....	Shanara-[tuk	Shanará-[tuk	.....	(North, [Niaghtok)	(Not so, [Ikliūtik)
None	Nūng'ū'tuk	.....	.....	.....	.....	Khwatūya
Neck	Wee-akúk	.....	.....	.....	.....	(Narrow, [Igūkinūk)
Near	Ooguksí-[khtuk	.....	.....	.....	.....	.....
Needle	Ming'kúng'	Minkū'n'	.....	.....	.....	Minkūk
Now	Hwat'ow	Púkmummi	Pukmummi	Peeseekak	.....	.....
Otter [(river)	Chínnikuk	.....	Pumi-úkh-[tūk	Pumiukh-[tuk	Kyūkhpak-[hakak	Oowignilnūk
Other	Astlárūk	Átla, I'par	Átla or [Ipar	Átla	.....	.....
Oil	.....	Ooksook	Oáhoruk	Oókherūk	.....	Ignik
Only	Tów'kwun	Keémi	Kissímmi	Kissimmi	.....	.....
Open	Eegeérasha	.....	.....	.....	.....	(Owl, Igcha-[khtūgali)
Old	Ukúthluk	.....	Ootukok	.....	.....	.....
Old man	.....	.....	Ung'ichuk	Ung'ichuk	.....	Oochinukh
Old woman	.....	.....	Okūkshak	Ahkok'tuk	.....	Aganūkhliū-[vak
Parki	Atkū'k	Ategúk	Artégi	Artégi	.....	Atkūk
Porcupine	.....	.....	Elankó-[chik	Elanko-[chik	.....	(Poplar, Au-[gūt)
Pipe	Kweényuk	Kwéenyuk	Kūnyuk	Kūnyuk	.....	.....
Powder [(gun-)	Poeyókh-[kuk	.....	Achára	.....	.....	.....
Powder [flask	Poeyókh-[kugwik	.....	Aradók-[shawol*	.....	.....	(Pike, Imakh-[ping'at)
Present (a)	Cheekeé-[kha	Cheekeé-[kha	Chikeéka	Chikeéka	.....	.....
Pain	Oknikhtuk	Arráh	Arráh	Arráh	.....	Akhnakhtū-[ah
Paddle	Ung'-wah-[wung'	.....	.....	.....	.....	.....
Quick	Padóga-[muk	Kolúmmuk	Kolúmmuk	Kolúmmuk	.....	.....

English.	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchigmūt.*	*Kuskwógmūt.*
Rabbit	Kuyūkth-[luk	Mukágh-[wuk	Ookalaýt-[siuk	Ookalaýt-[siuk	.....	.....
Rain	Ibizhúkh-[tuk	Igesikhtuk	Seulū'ktuk	Igwanúk-[tuk	Kitichtouk	Kitok & [Chliatuk
River	.....	Kweek	Kūk	Kūk	Kū-ik	Kwak
Rope (or [rawhide [line)	Tápkuk	Tópkok	Okle'-nok	Né-uk	.....	Nukchaklūk
Ring (a)	.....	.....	.....	Kū'lūn	.....	.....
Run (to)	.....	.....	.....	Akparo'k-[tuk	.....	(Rub, to, Mi-[chak)
Rock	Yeémukh	Cheén-muk	Oýagok	.....	Yahmakh	.....
Red	Kahwíkh-[kukla	.....	.....	.....	Kawikhtūk	Kivagok
Raven	Tūlū'kaguk	.....	.....	.....	Kanneshet	Kolkagūk
Sister	Anligū't-[kuh	At-luk'hk-[guh	Ahkeéa-[ghuh	Ahkówrū-[ghuh	.....	Agnawik
Son	Ig-nýʼ-akuk	Kutun'rū-[ghuh	Keetun-[rówgū-[ghuh	Erin'ūghuh	Mūkhta-[chuh	Ig-ny-ak
Sable [(Am.)	Kagū'-ish-[uk	Kuft'chík-[chuk	Kaveä't'-[cheük	Kahvit'-[chū-uk	.....	Kakhchich-[ūak
Sun (the)	Okókhtuh	Mút'chuk	Shūkeén-[yuk	Mút-chuk	Matchak	Akhtah
Star	Aghi-at	Ághzut	Ooblū'ge-[uk	Ooblū'giuk	Mittak	Mittit
Seal (large)	.....	Múklok	Múklok	Múklok	.....	Makliokh
Seal (small)	.....	Níyūk	Níksuk	Nitsuk	.....	Isliūgwak
Sled (dog-)	Kamúk	Kúmowt	Oonáyut	Oonáyut	(Sky, [Amigliuk)	Ikamchak
Snowshoes	Tun'g'yūk	Tun'g'lūk	Tugelūk	Pūsū'ge-uk	.....	(Storm, Anū-[gowak)
Ship	.....	Ung'izúkh-[puk	Oomiák-[puk	Oomiák-[puk	.....	(Smell, to, [Naghachūk)
Snow	Un'yuk	Slakhlik'-[tuk	Uphūn	Kaniktuk	Annyū, [Katagak	Kanúkshak
Sleep	.....	(to) Kow-[ukhtúnga	Shínik	Shínik	Innakht'un	.....
Sew (to)	.....	Minki	Keeliukh-[túnga	Keeliúk-[tunga	(Swan, Oo-[kūkhpik)	Minka
Salutation	Chammí	Chammí	Chammí	Chammí	(South, [Kanagag-[tok)	.....
Sell	Keepuk-[húktūng'	Akeechuk	Akeéchuk	Akeechuk	.....	Keepūshnū-[vak
Smoke	Ap'zik	Ópsuk	Is'suk	Is'suk	.....	Pūnkh
Sea	Immukhpik	Tógasuk	Tógayuk	Tógaysuk	Immokh	Imakhpuk
Small	Meekūk	M'ikūk	Mikidū'ruk	Miksūrów-[ruk	Mikong'-[gashak	Ikhūshūt
Summer	Keé-uk	Keé-ūkh-[tuk	Oopine-[rókhpuk	Oopane-[rókhtuk	.....	(Swan, Kūg-[yūk)
Sit	Akū'm	Akómi	Akawéeten	Akawéeten	.....	(Sand, Kagū-[yak)
Steal	Tigalíkh-[tuk	Tigalikh-[tuk	Iktigalik	Iktigalik	.....	.....
Sing	Ewáhgun	.....	Ahtók	Ahtū'n	.....	(Shout, to. [Wikhpuga-[kuh)

English.	*Ekógmūt.*	*Unalig'mūt.*	*Māhlemūt.*	*Kaviágmūt.*	*Chugáchig-mūt.*	*Kuskwógmūt.*
Skin	.....	.....	Ah'muk	.....	.....	.....
Smoke (to-[bacco, to)	M'tū'kukh-[lih	.....	Towgáha-[lunga	.....	(Sky, [Khl'a	.....
Split (a)	.....	.....	Kopéruk	.....	.....	.....
Selfish	.....	.....	.....	Yúnglitok	.....	.....
Shoot (to)	.....	.....	Shūpé-ga	Shūpéga	.....	.....
Spring	Oopenúkh-[kuk	Upahná-[kuk	.....	.....	.....	.....
Straight	Nakhlū'ti-[mut	.....	Nalūruk	.....	.....	.....
See (to)	Tamúkha-[kuh	Kenūréega	Keniárigah	Tówtuk	.....	.....
Slow	Chūgóf-[kenuk	Shūkich'uk	Chūkich'uk	.....	.....	.....
Speak	Apt'kah	Okóktuk	Okóktuk	.....	.....	Kalkhtik
Skin boat [(open)	Ongiuk	Oomiak	Oomiak	Oómiak	.....	Anyak
Spectacles [(snow)	.....	.....	Iūgak	.....	.....	(Ship, Shū-[nak)
Socks	Koléruk	.....	Atūlok	.....	.....	.....
Scissors	.....	.....	Shalishik	.....	.....	Kiplia-ūnik
Small [(very)	.....	.....	Mikirū-[rúmmuk	.....	.....	(Short, Nan-[ilnūk)
Strong	T'huk	.....	.....	.....	.....	.....
Stand	Nanúkhtun	.....	.....	.....	.....	(Sweet, Nik-[neekūk)
Strike	Tingilū'-[ghuk	.....	.....	.....	.....	(Sour, Agi-[nak)
Sorry	Kūnū'kuk	.....	.....	.....	.....	(She, Oona)
Steel (& [flint)	Kinéet	.....	.....	.....	.....	(Send, to, [Atakh)
Shot, [(small)	Ting'am-[yukzhūtí-[ka †	.....	.....	.....	.....	.....
Soup	Yū'khukuk	.....	.....	.....	.....	.....
Stick (a)	Okóghwuk	.....	.....	.....	.....	.....
Shaman	.....	.....	Ungatkū'-[otuk	.....	Kaglageh-[gik	Tūngalkh & [Analkhtūk
Then	.....	.....	Pik'pun	Pik'pun	(Thunder, [Katlkhek)	.....
That	.....	.....	Im'na	Im'na	.....	Oonakhwina
Take off	.....	Metomikh-[láyunga	Itome-[lūn'ga	Mutów-[lunga	.....	I-gazhgiū
Toes	.....	Ewahgún-[ka	Inūwútgha	Inūwútgha	.....	.....
There	.....	Tuhmahni	Tuhmarni	Tuhmarni	.....	Yani, Oong'-[nani
Teeth	Hū'dinka	Ki-ū'tik	Keégū	.....	Honti ?	Hūyūtik
Tail	.....	Pammégū-a	Pum'kok	.....	.....	(That way, [Yavit)
Track	.....	Tū'mi	Tū'mi	.....	.....	(This way, [Ookavit)
Tree	Naput	.....	Oakpik	Oákpik	Nigoga'k-[tok	Nikigwakh-[tut
Throat	.....	We-ahkote	.....	.....	.....	(True, Pach-[ikhpiak)
Thumb	Kūn'geluk	Ahzoon	.....	.....	.....	.....

† Literally, "to shoot geese."

English	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchigmūt.*	*Kuskwógmūt.*
Tube (of any kind)	.....	.....	Shūpelū	.....	.....	(Take, Tkhū)
Tongue	Oolū'ka	Oowa	Okok	Ooöwuk	Oolwa	Siwoghat?
Tell	.....	.....	Kanúkhtuk	Kanúkhtuk	.....	.....
Tippet	.....	.....	Komashi-ruk	.....	.....	(Thick, Oo-kūgalgyuh)
Thread	.....	Oovolig'he-rūk	.....	.....	.....	(Thin, Kimi-gilnagak)
Thank you	Speséeba	.....	Koyána	Koyána	.....	(They, Oo-nūt)
Tobacco	Tag'hwuk	.....	Tahwákh	Tabakh	.....	(Their, Illeit-nuk)
Tobacco bag	Stamásdu-ka	.....	.....	.....	Pliūshga-gak	(Thunder, Kalik)
Tired	Muganókh-tuktuk	.....	.....	.....	.....	(Took, Tkhwahka)
Village	Nū'nūt	.....	.....	.....	.....	.....
Valley	Kweega	.....	.....	.....	.....	.....
Vein	Ewáhlūk	.....	.....	.....	.....	.....
Wife	Nūlíkhuh	Nūliáyka	Nūleeka	Nūléega	.....	Nūliga
Woman	Okh'anak	Ogh'anut	Okanok	On'g'nut	A'ganak	A'gnak
Wolf	Kigūlū'nuk	Kū'lūnuk	Am'ahgūk	A'maghūk	Kaykhli-nak	.....
Water	Muk	Muk (or Tanuk)	Im'mik	Im'muk	Mik (or) Mokh	Mik
Wood	Kūbū'chuk	Ookūk	Kírūk	Kúzuk	(West, Oo-agagtok)	(Willow, Chagatit)
Walrus	.....	Ah'zūbuk	Oogerūk	Oogerūk	.....	Azvik
Whale	(none)	(none)	Ah'gahwah	Ah'gahwak	.....	Akhwik
Waukhne	.....	Ekótlewit	Ekóthlewik	Ekothlewik	.....	.....
Work	.....	Tigūlúkh-tuk	Chowétuk	Chowétuk	.....	(Walrus skin, Amakhkak)
Walk	I-eékhtuk	.....	Kagalū'k-tuk	Pesúkhtuk	.....	.....
Where	Náhkhoh	Now'khwa	Náhmi	Náhmi	.....	Nani
Why	Cheent	Sheen	Shūklū'ten	Sūklū'ten	.....	Chahkwa
When	.....	A'kawū	Mamághū	Mamághū	.....	.....
Winter	Ooksū'k	Ooksū'kh-tuk	Ooke-ū'kh-tūk	Ooke-ū'kh-tūk	.....	(Woollen, Tūnūlkhih)
We	.....	.....	Wúrgut	Wúrgut	.....	.....
Wind	Onaklúk-tuk	A'nowah	A'nowah	A'nowa	.....	Anūka
Weather	.....	Selámi	.....	.....	.....	.....
Whiskers	.....	U'ng'eet	Oo'meet	Oómeet	.....	.....
Wolverine	.....	Kópshik	Kópfwik	Kópfwik	.....	Kavchak
Warm	Oóknuk	.....	Onóktuk	Onóktuk	Magarakh-tok	.....
Want (I)	Pe-uk'htuk	.....	Iokto-apin	.....	.....	Peeūkhtūha
Want (I) water	.....	.....	Immūrū'n-ga	Immūrū'n-ga	.....	.....
Watched	.....	.....	Tówtukuh	.....	.....	(Weep, to, Kanū)
Whiskey, (lit. water)	.....	Táh'nuk	Táh'nuk	Táh'nuk	.....	(Well, Yū-guntūyah)
White	Hákhokoli	.....	.....	.....	Katakhtū	Oogolkak
Who	Keénuh	Keénuh	Keénuh	Kéenuh	.....	(Whose, K'yah)

English.	*Ekógmūt.*	*Unalig'mūt.*	*Máhlemūt.*	*Kaviágmūt.*	*Chugáchig-mūt.*	*Kuskwógmūt.*
What	Kiyū'khuh	Chúmuk	Chumuk	Chúmmuk	.....	Chaitūn
Window (lodge)	Táhruk	.....	Issúkhtok	.....	.....	(White fish, [Kahukhtūt)
Water (deep)	.....	Ete-ároke	.....	.....	.....	(Walrus tusks [Tūlūk)
What do [you call it	.....	.....	.....	.....	.....	Chastūn-[piakh-tkhū
Year (last)	Tow'unga	Utlūh'unee	Ipárni	Ipárni	.....	(Your, [L'pitiuk)
Year (next)	.....	.....	Ipárga	Ipárga	.....	Nihit
Yūkali	.....	Nūkút	Ikolū're-[wik	Ikolūre-[wik	.....	.....
You (thou)	Ikhl'wit	Ik'hlepit	I'llewit	I'llepit	'Tlepit	'Lpit
Yes	Hwókah	Wah	Wah	Wah	.....	(You pl. [L'pinūk)
Young [woman	.....	.....	Okanakne-[ókseok	.....	.....	.....
Young [man	.....	.....	Enuknū-[gátpekak	.....	.....	.....
Young	Nugachli-[pé-uk	.....	.....	.....	.....	.....
Year	Ooksū'k-[puk	.....	.....	.....	Chūleyegni	Ooksiūkh-[tūmak

WORDS TOWARD VOCABULARIES OF THE TÍNNEH TRIBES.

English.	*Nūláto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Arrow	K'oh	K'oh	K'oh	K'oh	Tutchónka
Axe	Muk'le-klála	Mukle'kklála	Mk'le-klála	Klatkléh	Tóhchili
Awl (*also* [Woodpecker)	Tikelklála	.....	.....	.....	.....
Ashes	Khklatz	Hklatz	Hklatz	Kowo'latzúh	H'klúhyah
Autumn	Santákha	Santúh	Santákha	Klasanták	Hóhtsun
Aurora	Yo-ikókhte-[tan	.....	.....	Yo-ikókhte-[tan	Yukhói
Alive	To-ikhklála	Tod'klóhn	.....	.....	Khū'nti
All	Etutsún	Tahklu'súh	Tutklū'kem	Etutsun	Klohtsék
Alder	Kokhtle'	Kokhtle'	.....	Kokhtl'	.....
Another	K'ténni	K'yū'yah	Katéna	K'ténni	.....
Arm	Tenakóhna	Tenakóhna	Tenakóhna	Sukoh'na	Sukh'án
Anus	Tenakayét	Tenakahyet	.....	Sukayét	.....
Afraid	Nel'ukút	.....	Nelūkút	Mukyáhunal-[hóhn	Niltsút
Angry	.....	.....	.....	.....	Mahútzuh
Above	Notokhún	.....	.....	No'tuk'hún	.....
Buttocks	Tenatlút	Tenatlút	.....	Suhklút	.....
Boy	Keelyóza	Sakhí	Yuki-óza	Keé-os	Chulkoyah
Brother, elder	.....	.....	Sūghuh	Sū'ghuh	Munokh'iya
Brother, [younger	Sū'gha	Sū'gha	Sihutlána	.....	Michílli
Beard	Tenatógha	Tenatógha	Tenatógha	S'dógho	Taughúh
Body	Tenazík	Tenazik	Tenazuk	Sitzik'	Sūht-zūtáh
Belly	Tenam'it	Tenamít	.....	Semít	.....
Beaver	No-yúh	Noyúh	Noyúh	Kakúh	T'suh
Birch (and [birch bark)	K'leh	K'leh	Kekh	K'ekh	Ahltóh
Black	Tatle'klútz	Tatle'klúh	Tatsunzagá	Kohtle'zúh	.....
Bad	T'satkláka	Stalágha	Tsohutkláka	T'sohklaka	Nazūnkúllay
Boots	Kakentúk	Kakaytúk	.....	Kakentúk	.....
Buying	Oonkát	Owūdukhát	Oonkhat	Kūnkat	Ootaskhát
Beads (black)	Seewóya	Seewóya	Tenanitlezih	.....	.....
Bring (*also* [negative)	N'tah	N'tah	.....	N'tah	.....
Blankets	Tsūdáh	Tsū'dah	Tsūtáh	Tsūdáh	Itsóhutzoht
By and by	Klat	Klat	Klat	Klat	Tuhtúh
Bow	Klikhtún	Klikhtún	Klikhtun	Ktíl'kas	.....
Be quiet	Tá-lek	Táhlek	Tálek	Tálek	Yūterokhtána
Back	.....	.....	Tenanūnáh	Stodsunáh	.....
Backbone	Tenanitle'náh	.....	Tenanitle'núh	Sununáh	.....
Brown bear♂	Klahzúh	Klahwūráh	Klahwūzúh	Kyū'yah	Sih
Brown bear♀	.....	.....	.....	Tsyónuh	.....
Black bear	.....	.....	Yūyūkí	Sūs	Sūs
Breasts	.....	Tenatsū'-ah	.....	Sitsū-ah	.....
Break	.....	Tukadakút	Khodat-eéo	Takadolchút	Ng'ketchitó-[wuh
Bullets	Kotléh	Kotláy	Kutatlúh	Kotléh	Kuhatlúh
Belt	K'theth	Kutzūdlukúh	Thulsth	K'theth	.....
Brown	.....	Tl'ukhótle'	.....	.....	.....

English.	*Nūláto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Bone	K'en	K'en	.....	K'en	.....
Boils (it)	.....	Neelkóh	Kokhlemátz	.....	.....
Bird (small)	Yah'túh	Klahyūdúh	Kakóza	.....	.....
Beads (white)	N'túlla	N'túlla	Nilkúllay	.....	Nilkū'-i
Blood	Lukóhna	Lukhoýna	.....	.....	Tahnéh
Boat (not [skin boat)	Medóyah	.....	Medóya	(skinb.) Tsee-[kókh	Ki-ee, Tlekh'-[kóh
Beaver [(spring)	.....	.....	.....	.....	Tiheeléeya
Bag	.....	.....	Nokhkútla	.....	Meeyuhhot-[kliyah
Beetle	Menohólnoi	.....	Tazokūniyóza	.....	.....
Bad (very)	T'satkláka-[hūlan	.....	Oolodikṭuh	.....	Hūtsoskláka
Breeches	Katsíkh	.....	Katzíkh	Katzíkh	Sitklígeh
Beads (red)	.....	.....	Tenatlukózeh	.....	.....
Beads (blue)	Kohnsítana	.....	Tsū-i-úk	.....	.....
Box	Tenadakū'na	Tenadakū'na	.....	.....	.....
Cap	Klakatalūóna	Klakatalūóh-[na	.....	Klakatalū-[óhna	.....
Come (here)	O'hni	Oh'ni	Ohni	Ko-oh'ni	Ohtziyéh
Crooked	Tidulzíkh	Tidulzeékh	.....	.....	.....
Chief	Tyóhn (Russ. [der.)	Tyóhn	Ty-ohn	Tyoh'n	.....
Cloud	Sodah'úh	.....	Yoh	.....	Yahkutl'
Copper	Taslokutlá	.....	.....	.....	.....
Cold	Atzū' or Azū'	Azū'	Atzū	Atzū'	Kūnikúh
Call	Azut'le	.....	.....	.....	.....
Catch	Ooneénluh	.....	.....	.....	Athle'chóht
Chin	Tenayahdúh	Teniyadúh	Teniyahdúh	Sihyadúh	Suhdiyúh
Chew	Teek'úsh	.....	.....	.....	.....
Child (boy)	T'sakí }	Nūkutsah'	Yukióza	Keelyóza	Chulkóya
Child (girl)	Sultayū'rah }		Tenahkotlóh	Nukothtl'-[yóza	Meekit
Coals (of fire)	T'ass	.....	T'ass	Klikh	.....
Coward	Atzik'	.....	.....	.....	.....
Comb	.....	M'tayktúka	M'taytluká	.....	.....
Crow	N'teékah	Klahwhū'n	Kūlána	Tutchóhn	Totsúh
Cheek	.....	.....	Tenanaklúh	Sinátle'	.....
Chest (the)	.....	.....	Tenatsle'náh	Steeatlenáh	.....
Cut	.....	.....	.....	.....	Tuntókhl'
Caps (gun)	.....	Kentūdohýah	.....	.....	.....
Chain (small)	.....	Kakanráykta	.....	.....	.....
Cloth	Kowó	Kowó and [Melogutáha	.....	Kowó	.....
Coming in [(I am)	Dentrastókh	Dentrastókh	.....	.....	.....
Canoe (birch)	Medóy'	Medóyah	Medóya	Medóya	Ki-ee
Chinbone	.....	Teniyatl'núh	Tenatl'nuh	Sihyatl'núh	.....
Dead	Tohn'klóh	Tl'atlerágh	Tolkloh'n	Tohnklóh	Sohteéntuk
Dance	Eéyoh	K'tókhlay	Kūlik	Keeleek	Tohwohlutzóh
Dog	Klíkh'k	Klikhk	Klikhk	Klikhk	Klankóyah
Dog (little)	Klikhyóza	Klikhyū'rah	Klikhyóza	Klikhyoza	.....
Don't know	Tustíni	Asó	Wiltsusinée-[ga	Tohsuhū'h	Shóhnoh

English.	*Nūlāto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Drink (I [want a)	Tūkat	Tūkat	Tū'ntūnū	Tūkat	.....
Duck	Nintál	Nintála	Nintála	Nintála	Tutsùn
Door	Kotoneét'ho- [na	Dotkáyt	.....	.....	.....
Drum(native)	.....	Shosh	.....	.....	.....
Dressing [hides (rub	.....	Nogátagus- [yésth bing)	.....	.....	.....
Dressing [hides (scra	.....	K'tagastlúk ping)	.....	.....	.....
Day	K'lut	Klut	H'lut	H'klut	Tehketsána
Down	Kalitáhwa	.....	Nótowoh	.....	.....
Deer (rein-)	Anóyah	Anóyah	Mitzíkh	Mitzíkh	Mutzíkh
Daughter [(elder)	S'ténah	S'ténah	Tuhyenuh	.....	Mitshée
Darkness	K'takhl'	.....	Tle'kóhoza	K'tahkhl'	.....
Dish [(wooden)	Klok	Klok	Kyikhklók	Klok	Tutlok
Drink (imp.)	Tūkát	.....	.....	.....	.....
Don't want	.....	.....	Tohodusnée- [ga	.....	.....
Die (will)	Kladazutlóh	.....	.....	.....	.....
Driving dogs	Hotlugatíkhl'	.....	.....	.....	.....
Daughter (younger)	S'tlah	.....	.....	S'tlah	.....
Dogs coming	Klukazutlí	.....	.....	.....	.....
Eye	Tenanóga	Tenanóga	Tenanóga	Sunóga	Sintaga
Ear	Tenatseragh	Tenatseragh	.....	Sutzohóh	Teétze
Eat	Keehoh	.....	Kohóhn	Keehoh'n	Sihtzuhóh
Evening	Kutsuntáh	.....	Hutzintúh	Vekhlerákht	.....
Egg	Kakah'zúh	.....	E-yó-za	Kakázza	.....
Elbow	Tenatzūs	.....	Tenatzū's	Sitzū's	.....
Enough	T'salúh	Etutsún	Etutsún	Etutsún	Tuh
Eyebrows	.....	.....	Tenanotle'to- [hūga	Sunotū'tla	.....
Eyelid	.....	.....	Tenanotáka	Sinutága	.....
Ermine	.....	.....	Kowozín	.....	.....
Earth	Khlatz	H'klatz	.....	Khlatz	N'nuh
Eating fish	.....	Kutasíkhtl'	.....	Keeshóhn	.....
Eat (imp.)	Keehóhn	Keehóhn	Keehóhn	Keehóhn	.....
Eat meat	.....	.....	.....	Nulanoish- [óhn	.....
Eyes shut	.....	.....	.....	Sinatlusutle	.....
Enceinte	.....	.....	.....	Bohon'koh	.....
Father	Tukaláh	Tukkála	Tuhkaláh	Tukaláh	Metáh
Fox (red)	Kohulkoí	Tass'kerr'ták	Koholkói	Nahkútla	.....
Fox (white)	.....	Kulzismáh- [yah	.....	.....	.....
Forget	Menoltínah	Menoltínah	Menoltínah	Menoltínah	.....
Fat	Kokóh	Kokóh	Kokóh	Kokóh	T'suhkóh
Fawn	Kuhkóya	Anoyóza	.....	Kuhkóya	.....
Forehead	Tenakadúh	Tenakadúh	.....	Suhkadúh	.....
Foot	Tenakúh	Tenakúh	.....	Suhkakūna	.....
Face	Tenanáh	Tenanáh	.....	Sūnan'	.....
Far off	Neelóht	Neelóht	.....	Neek'léh	.....
Flesh (meat)	Nulána	.....	.....	Nulana (hu- [man, Sinlún)	.....

English.	*Nūláto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Fly! (they)	Notókhl'	Mikhlee-óhn	... .	Notokhtl'	.....
Fly (a)	T'hūn	Thūn	.....	Thūn	.....
Flour	Khlatz	.....	.....	H'klatz	.....
Friend	Konnáh	.....	Sitzín	Konnáh	.....
Fingers	Tenanilot'lū'-[ka	Tenanilótlu-[ka	.....	Sinlotlágha	.....
Firewood (willow)	.....	.....	.....	Sūzúh	.....
Firewood (poplar)	Hoht'ltáh	Ktlátla	.....	Tahgúkhtl'	.....
Firewood (spruce)	.....	.....	... .	Stits	.....
Fire	Tahkū'na	Tahkū'na	.....	Khún	.....
Fish	Mahmúh [(dry) Telu	Mahmúh bukáh	.....	Mahmukát	Mahmúh
Fish (I want)	Mahmukát	Mahmukát	.....	.....	.....
Fish, salmon-[trout	Khololū'suh	Khokalimýa	.....	.....	.....
" small [salmon	Neliyúh	Hklūgúh	.....	.....	.....
" large [salmon	Khak	.....	Totkhákh	Kakh	.....
" whitefish, [large	N'tlágha	.....	.....	.....	.....
" " broad	Telíyuh	.....	.....	.....	.....
" " sea	Telmukkáh	.....	.....	Telmukká	.....
" " round	Huh'tén	.....	.....	.....	.....
" " hump-[backed	Kolokúh	.....	.....	.....	.....
" pike, [(E. estor)	Kūkiyúh	.....	.....	.....	.....
" sucker	Sunoyúh	Sunoyúh	.....	Sunoyúh	.....
" losh	Lūgūsh	.....	.....	.....	.....
" mudfish	Undū'k	.....	Mahmuhyóza	.....	Hleéweh
Forehead	Tenakadúh	.....	Tenakuh	.....	.....
Flint (gun)	Matsá	Matsah	Matzá	Matsa	Klath
Freeze	.....	.....	Neékhnukh	Kohkútle'	Asoht
Feathers	T'oh	.....	.....	.....	.....
Fishing	Katsuniláh	.....	.....	.....	.....
Fish gullets	K'lagh'h	.....	.....	.....	.....
Finger (one)	Tenatlót	Tenatlót	.....	Sinlót	.....
Going out (I [am)	Klatrastókh	Klatrostókh	.....	.....	Kinohói
Gun	Taltótla	Teltū'tla	Taltótla	.....	Tekúh
Give	Ooskát	Oo-oskát	Slówkhtoyt	Koniháh	Kutokhtúkhl'
Go	Vehókhtl'	Notrastoí	.....	Nothókhtl'	.....
Grind	Takadinikóh	.....	.....	.....	.....
Green	K'ton	Kt'on	.....	.....	.....
Goose (gray)	Tutsūnáh	Tutsūnáh	Tutsūnáh	Tutsūnáh	H'kah
Goose (white)	Hohkóh	Hohkoh	.....	Hokóh	.....
Good	Nazū'n	Nezū'n	Nazūn	Nazūn	Nezūn
Go away	Aneé	Notrastóy	Notrastokh	Aneé	Notrastókh
Good to eat	Tee-ukúts	....	Te-ukútz	Te-ukútz	.....
Grave	.....	Kokohódeni-[khtl'	Aninukhtá-[khl'	.....	.....
Gloves	Meetaghá	Melodítkhta-[ga	Toziswintága	Mintága	.....
Grass	.....	Alakhtukúk	.....	Khunyéh	.....

English.	*Nălăto Inʹgalik.*	*Ulūʹkuk Inʹgalik.*	*Tananá Inʹgalik.*	*Unakhatăna.*	*Tenán Kutchin.*
Grease	Hah	H'hah	H'hah	H'hah	.....
Grow	.....	.....	.....	Neeyakh	.....
Grouse [(white)	Telkúmma	Telkúmma	.....	Telmúkka	.....
Grouse [(black)	Toltóya	Toltóya	.....	Toltóya	.....
Hair (long)	Tenatlūʹghuh	Tenatlūʹgha	.....	K'lūh	Teehúh
Hair (short)	Klóghuh (fur)	Tenattokūʹna	.....	.....	.....
Head	Tenatlikh	Tenavóygho	.....	Suhkoyúh	Sit-thé
Heart	Tenatzáya	Tenatsayūna	.....	Sitzūeétle'- [nuh	.....
Hand	.....	Tenatlowot	.....	Sihtlowót	Sinlóh
Hand (palm [of)	Tenanilotala	.....	Tenanilotáh- [la	.....	.....
Hand (back [of)	Tenanilotúd- [sunah	Tenánilotód- [sunah	Tenanilotod- [sūna	Sihnlotódsū- [nah	.....
Heel	Tenakáh	.....	.....	Sakatútle	.....
He	.....	.....	.....	No'nish	Yohunnéh
Hot	.....	Honalkóh	.....	(Heated, [Nilukóh)	Nilkóh
Husband	Ten'ah	Tena	.....	.....	.....
Here	Kūʹsi	Kūʹsee	Kū-ún	.....	.....
His	(Hill, Set'l)	.....	.....	Weeyúh	Nuhhotiyéh- [yuh
House	Kun'nóh	.....	Nohulūʹkūna	.....	(Hill, N'tus- [thl')
Hear	Hot'likhhóni- [high	.....	Hūtlatlóhn	.....	Chū-ih-uch- [klóh
Hail	Tatliókhtle'	.....	.....	.....	(Heavy, N'tokhl')
Hungry	Kutlukát	Kutlukát	Tsohutkláka- [tikáhohn	Kutlukat	.....
I	Sih	Sih	Sih	Sih	Utun
Ice	T'un	T'han	T'un	T'un	T'hun
Indian (an)	Tenahyūʹ	.....	.....	.....	.....
Idle	Ko-ikhnéega	.....	.....	.....	.....
Island	D'ash	.....	Nū	D'ash	.....
Inside	.....	.....	Yuh	.....	.....
Iron	.....	Kazáka*	.....	.....	.....
Jump	Kéelikh	.....	.....	.....	.....
Jerk	Seel'tatsit	.....	(Intestines, [Kutsáyut)	.....	.....
Knife (small [sheath)	.....	No'kanalká- [ga	.....	.....	.....
Knife (clasp)	Nikhni'nál- [kūka	Iyūmazūʹla	.....	.....	.....
Knife(sheath)	Klakadóna	T'kadóhna	Klakadóhna	T'lakadóhna	Klahsihʹ
Know (I)	Mikhesūníkh	.....	Mikhlusúnikh	.....	.....
Kettle	Nalói	.....	.....	Yukáhsih	.....
Killing(act of)	Yeelkát	Yeelkát	Tsilikúh	Tutletíkh	.....
Knee	Tenakūʹt	.....	Tenatlūʹka	Sukút	.....
Knuckles	.....	Tenanlukút	.....	.....	.....
Lips	.....	Tenatóhman	.....	Sitowanuh	.....
Leg	Tenat'ná	Tenat'ná	Tenatle'núh	Sitle'náh	Sutl'núh

English	*Nūdáto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Large	N'koh	N'tsū	Nutsóghuh	N'kóh	N'choh
Love (I)	.....	.....	M'katestáh, [Mkat	M'katestáh	.....
Lie down	.....	.....	.....	Tastúh	.....
Lie (you)	Hohnsit'	Hohnsit'	Hohnsiht'	Hohnsit'	.....
Light (not [heavy)	.....	.....	Nt'lokháh	N'tlághah	.....
Like (similar)	Totonikhtle'	Kántāh	.....	Etakántah	.....
Lame	.....	.....	.....	Kaykuntle- [tíkh	.....
Lake	Meenūkút	.....	.....	.....	Vun
Leaf	Sūmáh	.....	.....	.....	.....
Many	Lo-óhn	Lo'oh'n	L'ohn	Ló-ohn	.....
Much	Hūlan	.....	Hutsóh	.....	.....
Mouth	Tenalóht	Tenalóht	Tenalóht	Sihlóht	Sihlókh
More (want- [ed)	Kli-ih'	.....	.....	Klihih'	.....
More (on [hand)	Ko-ūn'	.....	.....	.....	.....
Morning	Katokhmún	.....	Hoton'táh	.....	.....
Mine	Seeyúh	.....	Sih'yuh	Síyuh	Sahi
Moon	Tūkhtū'n	.....	.....	.....	Kl'tazóh
Moose	Tenikóh	Tenekúh	Tenekúh	Teneekúh	Tenejúh
Marmot	Kontokú'zza	.....	.....	Kontokúzza	(Month, [Tikheesóh)
Musquitoes	Klih	Klih	.....	.....	.....
Milk	K'ūh	.....	.....	.....	.....
Make	Koneedeníkh	.....	Tūgutle'síkh	.....	Ohtsúh
Mix	Kūhdchúh	.....	.....	.....	.....
Mink	Takhmáhi	Takhmáya	Takhmýa	.....	Chihtsū'l
Moss	K'lotle'	.....	.....	.....	.....
Man	Tenahyū'	Tenahyū'	Tenayū'	.....	Tinji'
Men	Tenahĺó	Tenaló	Tenaló	Tenaló	Tinji'
Man (old)	Sohkée	Tenatle'túh	.....	Sohkée	.....
Man (small)	Tenayū'za	Tenayū'za	.....	Tenayū'za	.....
Man (stingy)	Tenayūskíssa	Tenayūskíssa	.....	Tenayūskíssa	.....
Man (poor)	Tenayūkala	Tenayūkála	.....	Tenayūkála	.....
Man (one)	N'kokhtenáh	N'kókhtená	.....	N'kókhtenáh	.....
Man (white)	Khassak*	Khassák*	.....	.....	.....
Mother	Nakála	Nakála	Nukála	Nakála	Mah
Mittens	Mintága	Meetágha	.....	Mintága	Chūtz
Mirror	.....	M'neelohó- [ditoláni	.....	.....	(Mountain, [Nt'usthl')
Moose fawn	Tutsitseéga	Tutsitseéga	.....	Tutsitseéga	.....
Man (dead)	.....	T'slatlugha	.....	(Mouse, [Teelsúh)	.....
Men of the [Yukon	Yūkonikho- [tána	.....	.....	Yūkónikha- [tána	.....
Navel	Tenatzuhkít	Tenatzukit	.....	Sitzūkit	.....
Not, None	M'kúlla	M'kúlla	M'kúllay	M'kúlla	.....
Nose	Tenatzih	Tenanitzih	.....	.....	Sintzí
Not now	.....	Klatóna	.....	.....	.....
Nose (big)	Sínket'chuk	.....	.....	Sínket'chuk	.....
No	N'tyakhó	Kakála	N'týahoh	N'tah, N'týa- [khoh	Nūtága
Neck	Tenakúkhtle'	Tenakúkhtl'	.....	Sukúkhtl'	Sukkhóh

English.	*Nūláto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Nails (finger)	Tenanilokū'-[na	Tenanilokū'-[na	.....	Sinlokū'na	.....
New	Etlerokhtikh	Etlerokhtíkh	Etūrūghtigi	Etlerokhtíkh	.....
Near	Likhkūtá	Neelkū'tsa	Nihlkū'tsah	Nihl'kū'tsa	.....
Needles	Klotkan	Toghwtólee	(Now, Ato-[khóht	Klotkán	.....
Night	Kleetákhle'	.....	Kl'táhah	Kleetákhl'	.....
Narrow	Nt'chah'kúh	.....	N'chahkúh	.....	.....
Old	Klokhkée	Tuhkeéyuh	Tenakhl'táh	Oktuhkeéveh	Hutonúh
Only	Etutsún	.....	Etutsun	.....	.....
Open	Unketétzikh	.....	.....	.....	.....
Otter	Melazóhna	.....	Melazóhn	Melazhóna	Vūsi-éh
Other	K'tenni	K'ténni	Kaythukéh	.....	.....
Oil	Hah	.....	.....	.....	.....
Parki	T'ark	T'ark	T'ark	T'ark	.....
People	Tenalóht	Tenalóht	Tanaló	Tanaló	Kutchín
Pipe (tobac-[co)	Kū'nyuk	Kū'nyuk	Tūkak	Tokhak	Setidchí
Pain or sick-[ness	Amáh	Amáh	Amahlán	Amah	Avanéela
Powder	Kokū'na	Kokūna	Kokū'na	Kohkū'na	.....
Powder-flask	Kohdúh	Kohdúh	.....	Kohdúh	.....
Plenty	T'sahlúh	N'tsógha	.....	T'kódah	.....
Pull	.....	Ihl'kū't	.....	.....	.....
Paddle	Toloi	Toghulóya	Tolóy	Toh'yóah	Tohóy
Ptarmigan	Telkúmma	Telkúmma	Telkúmma	Telmúkka	Tahkóh
Perhaps	'Rúlhay	Ilháy	'Rúlhay	Iril'hay	.....
Quickly	N'tū'ghuh	N'tū'wuh	N'tū'ghuh-[tukhtán	N'tū'ghuh	N'tūguh
Rain	At'khún	.....	Ookhl'kohn	Atkhún	Tutl'chan
River	Kákhat	Meé-ukut	.....	Kakhat	Húneh
Rivulet	Ketakákhat	Húnhūz	Takotenúh	Ketakakhat	.....
River (the)	Yūkónna	Yūkónna	Yūkónna	Yūkónna	Yūkónna
Rock	Lū-oh'na	Lū-oh'na	.....	Lū-óhna	.....
Rabbit	Nūohnéeyah	Nū-ohmýah	K'oh	Belhūlána	Kah
Raven	N'teékah	Klahwhū'n	.....	Tah-chóhn	Tut-chóhn
Run (imp.)	N'tū'wuh	Tadlokót	.....	N'tū'gah	Konikói
Red	Tatluhkúts	Tat'lukúts	Tatlukū'za	Tatl'kúts	.....
Rope or line	Noghalnúh	.....	.....	No'ghalnih'	.....
Snow goggles	Nokhalūn'-[klók	.....	.....	Nokhalūn'-[klók	.....
Socks	Alokhtighóh	.....	.....	.....	.....
Scissors	Nikhnomen-[ólti	.....	.....	.....	.....
Snowshoes	Osh	Osh	.....	Ohsh	.....
Sled	Tatataníkh-[tle'	Khotl'	Hotl'	Khotl'	.....
Sable (Ameri-[can)	Kahkyóza	Kakayóza	Suhkúh	Suhkúh	Sūchiléh
Smoke (fire-)	Hkhlit	Kanoketóka	.....	Hklit	.....
Smoking (to-[bacco)	Kteehóhn	Klaterosíkh	.....	Takūnlitáh	.....
Sealskin	Kū'būk	K'ah	.....	(Sable trap, [Hahkhl')	.....

English.	*Nūlato In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Small	Nūkū'tsa	Nūkūjá	Kityóza	Nūkūtzá	N'sutla
Stick (a)	Takhún	Kō-ūkhs	.....	Takhún	.....
Say, or he [says	M'tenni	.....	Khū'ni	M'ténni	.....
Said (he)	Nizní	Nizní	.....	Nizní	.....
Said (it was)	M'tókhneh	.....	.....	M'tókhneh	.....
Son	Stūnah	M'tenáh	.....	S'túnah	Mitenah
Sister, elder	Shodáh	Mahtúh	Sohodúh	S'ohdúh	Metáytoh
Sister, young- [er	Staháh	Metatzúh	Statsáh	Statsúh	Mahtúh
Stone	Lū-oh'na	.....	Lūoh'na	Lūoh'na	Utsih
Sky	Tatsikh	.....	.....	Tatsikh	.....
Sun	Taltóhna	Taltóhna	Nuhoyúh	Taltóhna	Soh
Star	Klū-ū'n	.....	.....	.....	S'uhn
Spring	Hūlūkotóhn	.....	Hoitákha	.....	Hūlūkút
Summer	Santágha	Sahn'	Sanúh	Santaghá	Sant'
Sea	Tarayuk *	.....	.....	(He calls it, [Untédni)	.....
Squirrel	Klíka	Tohghultál	.....	Klíka	.....
Salmon	Kaht'le'	.....	.....	Kaht'le'	.....
Strong	N'kkl'	.....	.....	.....	.....
Stinking	Tatlugut	.....	.....	.....	.....
Steal	Klikhtendíkh	.....	Kutnukhtíkh	Dikhtún	.....
Smell	Tsutlisúh	Tsutlisúh	.....	Tahlikut	.....
Spit	Tahzútle	Tahzútle'	.....	Keezúh	.....
Strike	Takahiltzúh	N'tlzūs	Tolsunaníl- [tuts	N'tlezūs	.....
Squeeze	Nt'klūkht	N'klūkht	.....	Oontū'n	.....
Sorry	Kū'luh	.....	Honalikóh	.....	.....
Straight	Klighót	Kluhótalahóh	.....	.....	.....
See	Honikht'lóht	.....	N'lan	.....	.....
Slow	H'ghót	.....	.....	Hghot	.....
Steel (and [flint)	Tohnūnklíkh	Tohnūnklíkh	.....	.....	....
Same (the)	Kántah	.....	Káythluku- [kántar	Kántah	.....
Sit	Seedóh	.....	Teetóh	Seedóh	.....
Sew	.....	.....	Okhtle'seh	.....	.....
Swan	Tohwáh	.....	Táhmah	Tohwóh	.....
Stand	.....	.....	Tukulahún	Takálikha	.....
Shoot	.....	.....	Okhkákhtl'	K'deenikh- [tūkhl'	.....
Sell	Ooskhót	.....	.....	Ooskhát	Sūtaskát
Shirt	Kowót'ark	Kowot'árk	Ahch	Kowót'ark	.....
Snow	Nutágha	Nutágha	Nutágha	Nūtágha	Yuh
Slowly	H'ghot	Tagasótle	.....	H'ghot	Hwaht
Smoke hole	Hohwūtlátlen	Hklikhtyét	.....	Hklityet	.....
Shot	Nodatsútli	Kotlaykū'tsa	.....	Ehtententsū- [yeh	.....
Saw (he)	Honikh'lót	N'gotklá	N'lan	Eenerikhlán	.....
Saw (you)	Seekhlóhn	.....	.....	Seekhlóhn	.....
Soup	Tokhl'	Tokhl'	.....	Tokhtl'	....
Teeth	Tenalótlóh	Tenalotlóh	Tenawóh	Sitlotlū'gho	.....
Tongue	Tenatlū'la	Tenatlū'la	.....	Sitlū'la	.....
To-morrow	Kutohūdáh	.....	Kt'ohdúh	Khotonuh	Yihkóhn
Tobacco	Tahkū'na	Tahkū'na	.....	Tabáka*	.....
Tobacco bag	Massūdika	Stamásdūka	.....	Malyū'dika	.....
Talk	Kónihéh	.....	.....	Khonihih'	.....

English.	*Nūláto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
Take	.....	.....	Nilkhū't	Muhkonóh	.....
To-day	T'sawnúh	T'sawnúh	.....	Tsahunúh	T'sah
This	K'honíh	Ka	.....	Khohní	.....
Tree	.....	.....	.....	Tsowáh	Tsū'hwih
Thunder	Nikhle'tū'nah	.....	.....	Nikhltū'nah	.....
Toes	Tenakalwū'-[ghuh	Tenakalwū'-[ghuh	.....	Skalo-ūhl'ah	.....
Thanks	Marseé	Merseé	Sūwátzuh-[tusíntoh	Marseé	Mahsíh
Thumb	Tenakútl'	Tenakútle'	.....	Suhkútle'	.....
Thread	Kowók	Kowók	.....	.....	.....
Thimble	.....	Menatlúh	.....	.....	.....
Tired	T'mah	.....	Kowinestsone	.....	.....
Torn	.....	Kodateé-oh	.....	(Tell him, [Yūkotsoh	..... oníh)
Travel	.....	.....	Hokhanidóse	(Little toe, [Suhkulsim	(Travel, Nota-ýa) [stokhl')
Vein (or [blood-vessel)	Lukóhna	Lukóhna	.....	Lukóhna	.....
Village	Tsatlū'kee	.....	H'hat	Nahulūku-[nóhn	.....
Very hot	Atlebúh	.....	Nuhūnul-[kókhtl'	At'klebáh	.....
Water	Tū	Tū	Tū	Tū	Chū
Water (I [want)	Tūkát	.....	.....	Tūkat	.....
Water (bring)	Tūn'tah	.....	.....	Tūn'tah	.....
Water (he [drinks)	Tūkū'nah	.....	.....	.....	.....
Water (I [drink)	Tūkádeh	.....	.....	.....	.....
Water (you [drink)	Tūkatneh	.....	.....	.....	.....
Woman	Solt'ána	Sol'tána	Soltána	.....	Trinjóh
Woman (old)	Sūkala	Nūhūsteh	.....	Sohkála	.....
Wife	Oht	Oht	.....	Oht	.....
Wife (my)	S'oht	S'oht	.....	S'oht	.....
Wife (your)	N'oht	N'oht	.....	N'oht	.....
Wife (his)	M'oht	M'oht	Oitonyóht	B'oht	.....
Wait	Klat	.....	.....	Klat	.....
Walk	Hotreehóh-[tle'	.....	.....	.....	.....
Wood	Tseekah	.....	Tseekuh	Tatl'khū'n	T'sutz
Willow	K'as	K'as	.....	Tsutl'	.....
Wing (a)	M'kóhna	.....	.....	M'koh'na	.....
White	Th'en	T'hen	.....	L'kókhtl'	.....
Warm	Atzūm'kúlla	Azū'm'kúlla	Honalkóh	.....	.....
Wolverine	Nitzíkhtl'	Nikhtsíkhtle'	Niltsíkh	Nikhtsíkh	Nitsóh
What?	Toh?	T'mah?	. . . . .	Toh? Keneé?	.....
Why?	Hokhenée?	.....	Keénogun?	Tohnlóh?	.....
Want	Kat (a suffix)	.....	Yuhokudast-[lóhn	Kat'	.....
Wolf	Nikóhna	Nikohna	Kuhkowū-[nuh	Yus	Teekhí
Won't wait	. . . .	.....	Nokū'nuh	(What do you [want? N't	..... atsohokát)
Weather	....	. . . .	Kutiteéya	.....	.. ..

English.	*Nūláto In'galik.*	*Ulū'kuk In'galik.*	*Tananá In'galik.*	*Unakhatána.*	*Tenán Kutchin.*
We, Ours	.....	Neekūn	.....	T'seeyúh	Nohún
Watching	.....	Ehnrūtíh	.....	.....	.....
Walrus skin	.....	Tseekókh	.....	.....	.....
Wives (having 2)	.....	Nilnekhótayū	.....	.....	.....
Walking	.....	.....	.....	Hotreehótl'	Kyinti
Winter	Hweetághuh	.....	Nakhalū't	Hoydóh	Hwoi
Wind	.....	.....	.....	Hodeetsik'h	.....
Wood (green)	.....	.....	.....	T'sumáh	.....
Wild	.....	.....	.....	Nilkút	.....
Where?	Hotí?	.....	.....	Hotí	.....
Who?	.....	.....	.....	Tūmáh	.....
What say?	Tohténni?	.....	.....	Kūnih'	.....
What for?	.....	.....	.. ..	Kénoghun	.....
Weasel	Tohghultál	.....	.....	.....	.....
You, Your	N'neh	N'neh	N'neh	N'neh	Nun
Yes	Hoh	Hoh	Ah	Hoh	Ahháh
Yesterday	Kuhtóhna	.....	Kohtóhna	Kuhtóna	Kotenné́h
Yesterday (Day before)	Kutonakúh	.....	.....	Kodónhonot-[kláh	.....
Young	Klūghtogo-[lúgh	.....	Katas'tagulí-[leh	Atákhlehih	.....
Year	He-ahghúh	.....	Ohútlan	Nee-ohodáhl-[klut	Hihtah
Year (last)	Oghúh	.....	.....	Oghnūhnot-[klá	.....
Year (next)	Oghutláh	.....	.....	Keehonótital-[klút	.....
Yawn	.....	.....	.....	Ist'lósh	.....

APPENDIX G.

NATURAL HISTORY.

LIST OF THE MAMMALIA OF ALASKA.

INSECTIVORA.

Soricidæ.

Sorex Forsteri, RICH.	Large Shrew.
Sorex Cooperi, BACH.	Tiny Shrew.
Sorex pachypus, BAIRD, n. s.	White-sided Shrew.
Sorex Rossii, BAIRD, n. s.	Gray Shrew.

CARNIVORA.

Felidæ.

Lynx canadensis, RAF.	Canada Lynx.

Canidæ.

Canis familiaris, var. **borealis.**	Eskimo Dog.
Canis occidentalis, BAIRD.	Wolf.
Vulpes fulvus, BAIRD.	Red Fox.
Vulpes fulvus var **decussatus.**	Cross Fox.
Vulpes fulvus var. **argentatus.**	Silver or Black Fox.
Vulpes lagopus, BAIRD.	Stone Fox.

Mustelidæ.

Mustela Pennantii, ERXL	Fisher.
Mustela americana, TURTON.	Marten.
Putorius vison, BAIRD.	Mink.
Putorius pusillus, A. & B.	Least Weasel.
Putorius noveboracensis, DEKAY.	DeKay's Weasel.
Putorius Richardsonii, BONAP	Ermine.
Gulo luscus, SABINE.	Wolverine.
Lutra canadensis SABINE	Otter.
Enhydra marina, FLEMING	Sea-Otter

Ursidæ.

Procyon lotor, STORR	Raccoon.
Ursus horribilis? ORD.	Brown Bear, Grizzly.
Ursus Richardsonii, MAYNE REID.	Barren Ground Bear.
Ursus americanus, PALLAS.	Black Bear.
Ursus maritimus, LINN.	Polar Bear.

PINNIPEDIA.

Phocidæ.

Phoca Richardi, GRAY.	Hair-Seal.
Phoca? Pealii, GILL.	Smaller Hair-Seal.
"Phoca" nauticus, PALL.	Luvtak. Lachtak.
Pagomys? larga, PALL.	Nerpa.
Erignathus? equestris, PALL.	Banded Seal of Cape Románzoff.
Erignathus barbatus, O. FABR.	Bearded Seal.

Otariidæ.

Callorhinus ursinus, GRAY.	Fur-Seal.
Eumetopias Stelleri, GILL.	Sea-Lion.

Rosmaridæ.

Rosmarus obesus, ILLIGER.	Walrus.

RODENTIA.

Sciuridæ.

Sciurus hudsonius, PALLAS.	Red Squirrel.
Spermophilus Parryi, RICH.	Ivráshka. Marmot.
Arctomys pruinosus, GMELIN.	Siffleur. Hoary Marmot.
Castor canadensis, KUHL.	Beaver.

Muridæ.

Hesperomys leucopus, WAGN.	White-footed Mouse.
Arvicola xanthognathus, LEACH.	Yellow-nosed Mouse.
Arvicola Gapperi, VIGORS.	Redbacked Mouse.
Arvicola rubricatus, RICH.	Western Field Mouse.
Myodes hudsonius, FORSTER.	Hudson's Lemming.
Myodes grönlandicus, RICH.	Greenland Lemming.
Myodes trimucronatus, RICH.	Back's Lemming.
Myodes helvolus, RICH.	Tawny Lemming.

Hystricidæ.

Erethizon dorsatus, F. CUV.	Porcupine.

Leporidæ.

Lepus glacialis, LEACH.	Polar Hare.
Lepus campestris, BACH.	Polar Rabbit.

PROBOSCIDEA.

Elephantidæ.

Elephas primigenius, BLUM.	Fossil Elephant.

UNGULATA.

Cervidæ.

Alce americanus, JARDINE.	Moose.
Rangifer grœnlandicus, LINN.	Reindeer.
Cervus columbianus, RICH.	Black-tailed Deer.

Cavicornia.

Aplocerus montanus, RICH.	Mountain Goat.
Ovis montana, CUVIER.	Mountain Sheep.
Ovibos moschatus, BLAINVILLE.	Musk Ox. Fossil only?
Bos americanus?	Fossil Buffalo.
Bos priscus? FORBES.	Fossil Bison.
Bos crassicornis, FORBES.	Fossil Ox.

Equidæ.

Equus fossilis, FORBES.	Fossil Horse.

CETACEA.

Balænidæ.

Balæna mysticetus, LINN.	Bowhead.
Balæna Sieboldii, GRAY.	Japan Whale.
Balæna cullamach, CHAM.	Pacific Right Whale.
Rhachianectes glaucus, COPE.	California Gray Whale.
Megaptera versabilis, COPE.	Humpback.
Balænoptera velifera, COPE.	Finner.
Sibbaldius sulfureus, COPE.	Sulphur Bottom.

Physeteridæ.

Physeter macrocephalus, LINN.	Sperm Whale.

Delphinidæ.

Globiocephalus Scammonii, COPE.	Blackfish.
Orca ater, COPE.	Short-finned Killer
Orca rectipinna, COPE.	Killer.
Delphinus styx, GRAY.	Porpoise.
Delphinus obliquidens, GILL.	Bottle-nose Grampus.
Delphinapterus borealis, PEALE.	Right Whale Porpoise.
Phocæna vomerina, GILL.	Bay Porpoise.
Beluga, sp.	White Fish. Seé-sū-ŭk (Inn.).

SIRENIA.

Manatidæ.

Rytina Stelleri, BRANDT.	Sea-Cow. (Extinct.)

LIST OF THE FISHES OF ALASKA.

(The fishes collected by the Scientific Corps are yet undetermined; the list therefore only includes the most common species, and the names applied to them by the natives and Russians.)

Marine Fishes.

Scientific Name.	English.	Russian.	Native.
Gadus macrocephalus, TIL.	Cod.		
Gadus, sp.	Small Cod.		
Gadus gracilis, TIL.	Tomcod,	Waukhni,	Ikóthluk.
Hippoglossus vulgaris? CUV.	Halibut.		
Pleuronectes quadrituberculatus, PALL.	Flounder,	Kámbal.	
Platichthys stellatus, GIR.	Spiny Flounder,	Kámbal.	
Clupea mirabílis, GIR.	Herring.		
Clupea sagax, JEN.	Pilchard.		
Thaleichthys pacificus, GIR.	Úlikon,		Úlikon.
Hexagramma Stelleri, TIL.	Sculpin,	Golovárti.	
Hemilepidotus trachurus, PALL.	Sculpin.		
Hypomesus olidus, GUNTH.	Smelt.		
Mallotus villosus, MULL.	Capelin.		
Hippocampus ingens? GIR.	Sea-Horse.		
Orthagoriscus analis, AYRES.	Sunfish.		
Eumicrotremus orbis, GUNTH.	Globe-fish.		
? ——— ———	Mullet.		
? ——— ———	Rock Perch.		

Fresh-water Fishes of the Yukon.

Salmo alpinus? LINN.	Salmon Trout,	Kolshéh,	Kholotūsúh.
Salmo purpuratus, PALL.	Purple Salmon.		
Onchorhynchus orientalis, PALL.	King Salmon,	Chowíchee,	K'hak.
Onchorhynchus proteus, PALL.	Salmon,	Hoíkoh,	
Onchorhynchus lycaödon, PALL.	Dogfish,		Nulagúh
Onchorhynchus sanguinolentus, PALL.	Redfish,	Krásnoi riba,	Neliyúh.
Onchorhynchus lagocephalus, PALL.	Salmon,	Keézich,	Nūt'ghlaghúh.
Coregonus muksun, PALL.	Broad Whitefish,	Maksū'n,	Teliyúh
Coregonus nasus? PALL.	Round Whitefish,	Krūg,	Húh'ten
Coregonus, sp.	Sea Whitefish,	Morskoí sighá,	Telmúkkah.
Coregonus, sp.	Nulato Whitefish,	Cighá,	Seeghúh
Coregonus, sp.	Humpbacked "	Korabáti,	Kolokúh.
Luciotrutta leucicthys, PALL.	Great Whitefish,	Naylima,	Nt'lágha.
Thymalis Pallasii, CUV.	Grayling,	Kóraski,	Telmyáh.
Esox estor, LES.	Pike,	Sū'khuh,	Khūkíyuh.
Lota maculata? LIN.	Losh,	Nalíme,	Lūgúsh.
Catostomus teres, MITCH.	Sucker,	Kraskeé,	Sunoyúh.
Cottus? sp.	Blackfish,	Tchörny riba,	Undū'k.
Entosphenus, sp.	Lamprey.		

Kennicott's Owl.

BIRDS OF ALASKA.

THE following list of the birds obtained in Alaska by the Scientific Corps will be of interest to many. Those who desire to pursue the subject further are referred to the publications of the Chicago Academy of Sciences for 1869.

Italics indicate that the bird is new to science or to North America.

K. denotes the locality, as Kadiák } Sitka District.
S. " " " " Sitka }
Y. " " " " the Yukon Territory.
† " that the species is common to both.
O. " " " eggs were also obtained.

DUCK HAWK.	Falco anatum. † O.
PIGEON HAWK.	Hypotriorchis columbarius. † O.
GERFALCON.	Falco sacer. Y.
GOSHAWK.	Astur atricapillus. Y. O.
SHARP-SHINNED HAWK.	Accipiter fuscus. †.
BROWN HAWK.	Buteo insignatus. Y.

Swainson's Hawk.	Buteo Swainsoni. Y. O.
Rough-legged Hawk.	Archibuteo lagopus. † O.
Marsh Hawk.	Circus hudsonius. Y.
Golden Eagle.	Aquila canadensis. Y.
Bald Eagle.	Haliaetus leucocephalus. S. K.
Fish Hawk.	Pandion carolinensis. † O.
Great Horned Owl.	Bubo virginianus. Y. O.
Kennicott's Owl.	*Scops Kennicottii*, Elliot, n. s. S.
Short-eared Owl.	Brachyotus Cassini. Y.
Great Gray Owl.	Syrnium cinereum. Y.
Sparrow Owl.	Nyctale Tengmalmi. Y.
Snowy Owl.	Nyctea nivea. Y.
Hawk Owl.	Surnia ulula. † O.
Hairy Woodpecker.	Picus villosus. S.
Downy Woodpecker.	Picus pubescens. †
Three-toed Woodpecker.	Picoides hirsutus. Y.
Golden Flicker.	Colaptes auratus. Y.
Red-shafted Flicker.	Colaptes mexicanus. S.
Humming-Bird.	Selasphorus rufus. S. O.
Kingfisher.	Ceryle alcyon. †
Dwarf Thrush.	Turdus nanus. S. K.
Oregon Thrush.	Turdus ustulatus. S.
Olive-backed Thrush.	Turdus Swainsoni. Y. O.
Gray-cheeked Thrush.	Turdus aliciæ. † O.
Robin.	T. migratorius. Y. O.
Western Robin.	Turdus nævius. † O.
Stone chat.	*Saxicola œnanthe.* Y.
Ruby-crowned Wren.	Regulus calendula. Y.
Golden-crowned Wren.	R. satrapa. S. K.
Water Ouzel.	Hydrobata mexicana. Y.
Tit Lark.	Anthus ludovicianus. †
European Wagtail.	*Budytes flava.* Y.
Golden-crowned Thrush.	Seiurus aurocapillus. Y.
Water Thrush.	S. noveboracensis. Y. O.
Orange-crowned Warbler.	Helminthophaga celata. Y. O.
European Warbler.	*Phyllopneuste Kennicottii*, Baird, n. s. Y.
Yellow-rump Warbler.	Dendroica coronata. Y.
Black-cap Warbler.	Dendroica striata. Y.
Yellow Warbler.	Dendroica æstiva. † O.
Black-cap Flycatcher.	Myiodioctes pusillus. † O.
Barn Swallow.	Hirundo horreorum. † O.

Eave Swallow.	Hirundo lunifrons. Y. O.
River Swallow.	Hirundo bicolor. Y.
Bank Swallow.	Cotyle riparia. Y. O.
Waxwing.	Ampelis garrulus. Y. O.
Great Shrike.	Collyrio borealis. Y.
St. George's Wren.	*Troglodytes alascensis* Baird, n. s. St.
Winter Wren.	T. hyemalis. S. [George's.
Black-cap Titmouse.	Parus atricapillus. †
Red Titmouse.	Parus rufescens. S.
Hudson Bay Titmouse.	P. hudsonicus. Y.
Skylark.	Eremophila cornuta. Y.

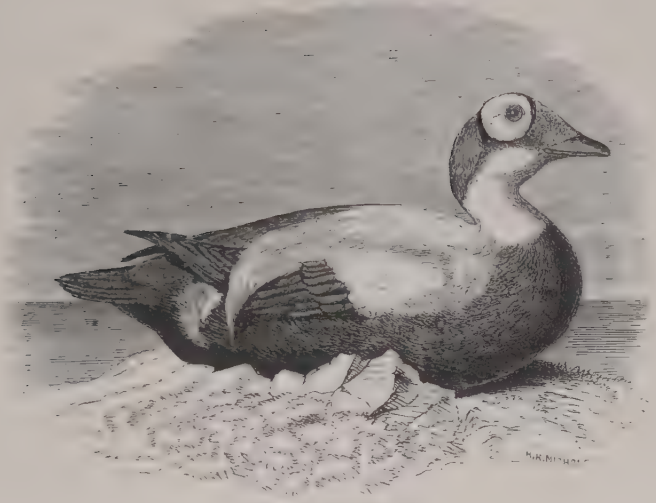
Pyrrhula var. Cassini.

American Bullfinch.	*Pyrrhula coccinea* var. *Cassini* Baird.
Pine Grosbeak.	Pinicola enucleator. † [Y.
Red Crossbill.	Curvirostra americana. S.
White-winged Crossbill.	Curvirostra leucoptera. Y.
Redpoll.	Ægiothus linaria. Y. O. K., and *var.* fuscescens.
Gray-necked Finch.	*Leucosticte griseinucha.* † O. St. George's. Bon. *not* auct.
Island Finch.	*Leucosticte littoralis* Baird, n. s. S.
Snow Bunting.	Plectrophanes nivalis. Y. O.
Lapland Longspur.	P. lapponicus. Y.
Painted Bunting.	P. pictus. Y.
Savannah Sparrow.	Passerculus savanna. † O.
Nootka Sparrow.	P. sandwichensis. S.
Spotted Sparrow.	Passerculus anthinus. † O.
Lark Sparrow.	Pass. alaudinus. †
Gambel's Finch.	Zonotrichia Gambelli. Y. O.

Golden-crowned Finch.	Zonotrichia coronata. S. K.
Oregon Snowbird.	Junco oregonus. S.
Black Snowbird.	Junco hyemalis. Y. O.
Tree Sparrow.	Spizella monticola. † O.
Lincoln's Finch.	Melospiza Lincolnii. Y.
Rusty Song Sparrow.	Melospiza rufina. S.
Kadiak Finch.	*Melospiza insignis* Baird, n. s. K.
Fox-colored Sparrow.	Passerella iliaca. Y. O.
Oregon Finch.	Passerella Townsendi. S. K.
Rusty Blackbird.	Scolecophagus ferrugineus. † O.
Raven.	Corvus carnivorus. † O.
Western Fish Crow.	Corvus caurinus. S.
Clarke's Crow.	Picicorvus columbianus. S.
Magpie.	Pica hudsonica. S. K.
Steller's Blue Jay.	Cyanura Stelleri. S.
Canada Jay.	Perisoreus canadensis. Y. O.
Canada Grouse.	Tetrao canadensis. Y. O.
Dusky Grouse.	Tetrao obscurus. S.
Pheasant.	Pediœcetes phasianellus. Y. O.
Ruffed Grouse.	Bonasa umbellus. Y. O.
Oregon Grouse.	Bonasa Sabinii. S.
White Grouse, Corapatka.	Lagopus albus. Y. O.
Rock Grouse.	Lagopus rupestris. Y. O.
Sand-hill Crane.	Grus canadensis. Y. O.
Little Crane.	Grus *var.* fraterculus. Y.
Great Blue Heron.	Ardea herodias. S.
Golden Plover.	Charadrius virginicus. † O.
Semi-palmated Plover.	Ægialitis semipalmatus. † O.
Black-bellied Plover.	Squatarola helvetica. †.
Surf Bird.	Aphriza virgata. S.
Oyster Catcher.	Hæmatopus niger. S. K.
Turnstone.	Strepsilas interpres. Y.
Black Turnstone.	Str. melanocephala. † O.
Northern Phalarope.	Lobipes hyperboreus. Y. O.
Red Phalarope.	Phalaropus fulicarius. Y.
English Snipe.	Gallinago Wilsonii. †
Red-breasted Snipe.	Macroramphus griseus. Y.
Longbeak.	Macr. scolopaceus. Y. O.
Knot.	Tringa canuta. †
Purple Sandpiper.	Tringa maritima. †
Red-backed Sandpiper.	Pelidna *var.* americana. † O.

Jack Snipe.	Actodromus maculatus. †
Baird's Snipe.	Actodromus Bairdii. †
Least Sandpiper.	Actodromus minutilla. † O.
Sanderling.	Calidris arenaria. †
Little Sandpiper.	Ereunetes pusillus. † O.
Tell-tale.	Gambetta melanoleuca. S.
Yellow Legs.	Gambetta flavipes. Y. O.
Solitary Sandpiper.	Rhyacophilus solitarius. Y.
Tatler.	Heteroceles brevipes. †
Spotted Sandpiper.	Tringoides macularius. †
Field Plover.	Actiturus bartramius. Y.
Buff-breasted Snipe.	Tryngites rufescens. †
Hudson Godwit.	Limosa hudsonica. Y.
European Godwit.	*Limosa uropygialis.* Y. O.
Esquimaux Curlew.	Numenius borealis. Y.
Curlew.	Numenius hudsónicus. †
Coot.	Fulica americana. Y.
American Swan.	Cygnus americanus. Y. O.
Trumpeter Swan.	Cygnus buccinator. Y. O. ? S.
Snow Goose.	Chen hyperboreus. Y.
White-fronted Goose.	Anser Gambelii. Y. O.
Canada Goose.	Bernicla canadensis. † O.
Western Goose.	Bernicla *var.* occidentalis. S.
White-cheeked Goose.	Bernicla leucopareia. Y.
Hutchins' Goose.	Bernicla Hutchinsii. Y. O.
Black Brant.	Bernicla nigricans. Y.
Emperor Goose.	Chlœphaga canagica. Y. O.
Mallard.	Anas boschas. Y. O.
Pintail.	Dafila acuta. † O.
Green-winged Teal.	Nettion carolinensis. † O.
Blue-winged Teal.	Querquedula discors. Y.
Shoveller.	Spatula clypeata. Y.
Bald-pate.	Mareca americana. Y. O.
Great Blackhead.	Fulix marila. † O.
Little Blackhead.	Fulix affinis. Y. O.
Canvas-back.	Athya vallisneria. Y. O.
Golden-eye.	Bucephala americana. Y. O.
Barrow's Golden-eye.	Bucephala islandica. † O.
Butter-Ball.	Bucephala albeola. Y. O.
Harlequin Duck.	Histrionicus torquatus. †
Old Squaw, Safka.	Harelda glacialis. † O.

Steller's Eider.	Polysticta Stelleri. K.
Spectacled Eider.	Lampronetta Fischeri. Y. O.



Lampronetta Fischeri.

Velvet Duck.	Melanetta velvetina. † O.
Surf Duck.	Pelionetta perspicillata. † O.
Long-billed Scoter.	Pelionetta Trowbridgii. S.
Scoter.	Oidemia americana. Y. O.
Pacific Eider.	Somateria V-nigra. Y. O.
King Eider.	Somateria spectabilis. Y. O.
Sheldrake.	Mergus americanus. †
Red-breasted Merganser.	Mergus serrator. † O.
Brilliant Cormorant.	*Graculus bicristatus* Pallas. Y. K.
Double-crested Cormorant.	Graculus dilophus? S.
Violet-green Cormorant.	Graculus violaceus? S. K.
Gony.	*Diomedea nigripes.* S. (*Oceanic.*)
St. George's Fulmar.	*Fulmarus Rogersi.* Y.
Fork-tailed Petrel.	Thalassidroma furcata. S.
Leach's Petrel.	Thalassidroma Leachii. S.
Slender-billed Petrel.	Nectris tenuirostris Temm. Y.
Arctic Skua.	Stercorarius parasiticus. Y. K.
Sea Hawk.	Stercorarius Buffoni. Y.
Burgomaster.	Larus glaucus. Y.
Pacific Gull.	Larus glaucescens. S K.

White-winged Gull.	Larus leucopterus. Y. O.
Herring Gull.	Larus argentatus. Y. O.
White Gull.	Larus Hutchinsii. Y.
Northern Gull.	*Larus borealis.* Y.
Short-billed Gull.	Larus brachyrhynchus. † O.
Bonaparte's Gull.	Chroicocephalus philadelphia. †
Kittiwake.	Rissa tridactyla. †
Red-footed Kittiwake.	*Rissa brevirostris* Brandt *not* auct.
Sabine's Gull.	Xema Sabinii. Y. [St. George's.
Arctic Tern.	Sterna macroura. † O.
White-tailed Tern.	*Sterna aleutica* Baird, n. s. K. O.
Short-tailed Tern.	Hydrochelidon fissipes. Y. O.
Loon.	Colymbus torquatus. Y. O.
Arctic Diver.	Colymbus arcticus. Y. O.
Adams' Diver.	Colymbus Adamsii. K.
Red-throated Diver.	Colymbus septentrionalis. Y.
Red-necked Grebe.	Podiceps griseigena. Y. O.
Horned Grebe.	Podiceps cornutus. Y. O.
Tufted Puffin.	Mormon cirrhata. †
White-breasted Puffin.	Mormon corniculata. †
Labrador Auk.	Sagmatorrhina labradoria. K.
Hornbill.	Cerorhina monocerata. S.
Crested Auk.	Phaleris cristatella. K.
Little Auk.	Phaleris microceros. Y. K.
Dusky Auk.	Phaleris tetracula. Bering Strait.
Least Auk.	Phaleris pusilla. Aliáska.
Cassin's Auk.	*Simorhynchus Cassini* Coues, n. s. Ounimak Pass.
Guillemot.	Uria columba. † O.
Foolish Guillemot.	Uria lomvia. K.
Californian Murre.	Uria californica. S. K. O.
Thick-billed Murre.	Uria arra. K. St. George's Island.
Marbled Guillemot.	Brachyrhamphus marmoratus. S.
Wrangell's Guillemot.	Brachyrhamphus Wrangellii. S. [S.
Ancient Auk.	Brachyrhamphus antiquus. Aliáska.

The above refers only to the species actually collected. Sundry others were observed, but not obtained, as the hooded merganser and the European lapwing; but it was considered best to catalogue only those actually brought home. Many of which the eggs were not obtained were known to breed. Future collectors may be expected to make additions, both to the number of known birds inhabiting the country, and the knowledge of their geographical distribution.

INSECTS.

List of Diurnal Lepidoptera.

Vanessa antiopa Ochs. Nulato, May.
Erebia discoidalis Kirby. Yukon River, May and June.
Erebia Mancinus Doubl. Nulato, May.
Grapta faunus Edw. ♀ Yukon River, June.
Melitæa Helvia Scudder, n. s. Yukon River, June 15th.
Melitæa sp. (? *M. palla* Boisd.). Fort Yukon.
Lycæna Lucia Westw. Yukon River, June.
Pieris venosa Scudder. Yukon River, June and July, below Nulato.
Anthocaris lanceolata Boisd. Yukon River, above the Ramparts.
Colias interior Scudder. Fort Yukon, June 25th.
Papilio Turnus Linn. Yukon River, June and July, abundant.
Papilio Aliaska Scudder, n. s. Nulato to Hudson Bay, May and June.
Parnassius Eversmannii Ménét. Yukon River, June 15th. (Siberian.)

Species were noticed, but not obtained, which may have been other than those enumerated above.

List of Nocturnal Lepidoptera.

BOMBYCIDÆ.

Euprepia caja Linn. St. Michael's, August.
Platarctia borealis Möschler.
Phragmatobia Dallii Packard, n. s. June 15th.
Gastropacha alaskensis Packard, n. s. Yukon River, June 10th.

PHALÆNIDÆ.

Melanippe hastata Linn. Yukon, July.
Coremia sp. indet. Nulato.
Hæmatopis sp. indet.
Anisopteryx sp. indet. St. Michael's, September 20th.

TINEIDÆ.

Depressaria and three other unrecognizable forms.

List of Hymenoptera.

APIDÆ.

Bombus occidentalis Greene. Yukon Valley.
Bombus flavifrons Cress. Yukon Valley.

Bombus frigidus Smith. Nulato.
Bombus lacustris Cress. Kutlik.
Bombus Kirbyellus Curtis? Kutlik.

VESPIDÆ.

Vespa arenaria Fabr. Kutlik.
Vespa norvegica Fabr. Kutlik.
Vespa tripunctata Packard, n. s. Kutlik.
Vespa alaskensis Packard, n. s. Kutlik.

POMPILIDÆ.

Pompilus luctuosus Cress. Kutlik.

FORMICIDÆ.

Formica herculanea Linn. Kutlik.

UROCERIDÆ.

Urocerus flavicornis Fabr. Yukon.

List of Neuroptera.

PERLINA.

Pteronarcys biloba Newman. Nulato.
Perla sp. (undetermined). Yukon River.
Perla sp. " " "
Perla (*Nephelion*) *Dallii*, Uhler, n. s. Yukon River.
**Perla severa* Hagen. Unga Island.

AGRIONINA.

Agrion annexum Hagen. June 25, near Fort Yukon.
Lestes sp. ♂ (undetermined). Yukon River.

ÆSCHNINA.

Æschna clepsydra Say. July, near Fort Yukon.
**Æschna sitkensis* Hagen. Sitka.
**Æschna juncea* Linn. Kenai, Cook's Inlet.

* Added to complete the list of known Alaskan species, from Hagen's Synopsis of the North-American Neuroptera.

LIBELLULINA.

Cordulia, like *C. æna.* Yukon River.
Cordulia Shurtleffi Scudder. June, near Fort Yukon, common.
Cordulia eremita Scudder. June, near Fort Yukon.
Diplax intacta Hagen. June 25, near Fort Yukon.

PHRYGANINA.

**Limnophilus vastus* Hagen. Kenai, Cook's Inlet.
**Limnophilus perjurus* Hagen. Kenai, Cook's Inlet.
Limnophilus ? n. s. Nulato, May 12th, one specimen.
Cryptothrix insularis Hagen, n. s. Nulato.

LIST OF USEFUL PLANTS INDIGENOUS IN THE TERRITORY OF ALASKA.

RANUNCULACEÆ.

Hepatica triloba Chaix. Sitka.
Coptis trifolia Sal. "
C. asplenifolia Sal. "
Aconitum Napellus, var. *delphinifolium.* Sitka, northward.

CRUCIFERÆ.

Nasturtium palustre D. C. Yukon and Unalashka.
Cochlearia fenestrata R. Br. Norton Sound, north.
C. oblongifolia D. C. " " "
C. anglica L. Kotzebue Sound.

LINACEÆ.

Linum perenne L. Fort Yukon.

LEGUMINOSÆ.

Trifolium repens L. Sitka (introduced).
Lathyrus maritimus Big. Sitka and northward.
Hedysarum Mackenzii Rich. Yukon.

ROSACEÆ.

Rubus spectabilis Pursh. Sitka, Kadiak.
R. arcticus L. Kotzebue Sound.

* See note on preceding page.

R. pedatus Smith. Sitka.
R. chamæmorus L. Sitka and northward.
R. nutkanus Moç. Sitka.
Rosa cinnamomea L. Yukon.
Rosa blanda L. Sitka.
Pyrus rivularis Dougl. Sitka.
P. sambucifolia Cham. "

GROSSULACEÆ.

Ribes rubrum L. Yukon.
R. hudsonianum Rich. Yukon.
R. laxiflorum Pursh. Sitka.
R. bracteosum Dougl. "
R. lacustre Pursh. Arctic Coast.

UMBELLIFERÆ.

Archangelica officinalis Hoffm. Sitka, northward
A. Gmelini D. C. Sitka, northward.

ARALIACEÆ.

Panax horridum Smith. Sitka, Kadiak.

CAPRIFOLIACEÆ.

Sambucus pubens Michx. Sitka.

VALERIANACEÆ.

Valeriana dioica L. Norton Sound.
V. capitata Willd. Arctic Coast.

COMPOSITÆ.

Arnica angustifolia Vahl. Yukon. Kotzebue.
A. Chammissonis Less. Unalashka.
A. obtusifolia Less. "
A. unalashkensis Less. "
A. latifolia Bong. Sitka.
Artemisia vulgaris L. var. *Tilesii.* Norton Sound.
Taraxacum dens-leonis Desf. Arctic Coast.

ERICACEÆ.

Vaccinium Vitis-idæa L. Sitka. Yukon.
V. myrtilloides Hooker. "
V. myrtillus L. "
V. Chamissonis Bong. " Unalashka.
V. ovalifolium Smith. "
V. parvifolium Smith. "
V. Salicinum Cham. Unalashka.
V. cæspitosum Michx. Sitka.
V. uliginosum L. Sitka, northward.
Oxycoccus vulgaris L. Sitka, northward.
Arctostaphylos alpina Spreng. Sitka, northward.
A. uva ursi Spreng. Unalashka, northward.

GENTIANACEÆ.

Gentiana amarella L. Sitka.

POLYGONACEÆ.

Oxyria reniformis Hooker. Sitka, northward.
Rumex salicifolius Weinru. "
R. acetosa L. Kotzebue Sound.
R. domesticus Hartm. Sitka, northward.
Polygonum viviparum L. Sitka, northward.

EMPETRACEÆ.

Empetrum nigrum L. Sitka, northward.

SALICACEÆ.

Salix speciosa H. & A. Yukon. Kotzebue.
S. Richardsonii Hook. Kotzebue.
S. Barclayi Anders. Kadiak.
S. phyllicoides Anders. Western Arctic America.
S. sitkensis Led. Sitka.
Populus balsamifera L. Sitka, northward.

URTICACEÆ.

Urtica dioica L. Sitka.

BETULACEÆ.

Betula glandulosa Michx. Yukon.
B. nana L. Norton Sound. Arctic.
B. Ermani Cham. Unalashka.
Alnus viridus D. C. Sitka, northward.
A. rubra Bong. " "
A. incana Willd. Kotzebue Sound.

MYRICACEÆ.

Myrica Gale L. Sitka, northward.

CONIFERÆ.

Abies canadensis Michx. Sitka.
A. Mertensiana Bong. "
A. sitkensis Bong. "
A. alba Michx. Yukon Territory.
Larix davurica Fisch. Kadiak. Yukon?
Pinus contorta Dougl. Sitka. Fort Selkirk, southward.
Chamæcyparis nutkatensis Spach. Sitka (= *Thuja excelsa* Bong).
Juniperus communis var. *alpina* Willd. Sitka. Yukon?

LILIACEÆ.

Fritillaria kamchatkensis Fisch. Sitka, northward.
Allium schænoprasum L. Yukon.
Veratrum Escholtzii Gray. Sitka.

GRASSES.

GRAMINEÆ.

Hordeum pratense L. Sitka.
H. jubatum L. Yukon.
Elymus sibiricus L. Sitka.
E. arenarius L. Norton Sound.
E. mollis Trin. Sitka, northward.
Triticum repens L. Kotzebue Sound.
Festuca ovina L. " "
F. rubra L. Sitka, northward.
F. subulata Bong. Sitka.
Bromus ciliatus L. Kotzebue.

B. subulatus Led. Unalashka.
B. aleutensis Trin. "
B. sitkensis Bong. Sitka.
Poa stenantha Trin. Unalashka.
P. flavicans Led. "
P. arctica R. Br. Sitka to Kotzebue.
P. cenisia All. " "
P. rotundata Trin. Unalashka.
P. nemoralis L. Sitka to Kotzebue.
P. annua L. " "
P. pratensis L. Kotzebue.
Colpodium fulvum Led. Kotzebue.
Dupontia psilosantha Rupr. Kotzebue.
Catabrosa aquatica Beauv. Sitka. Kotzebue.
C. algida Fries. Kotzebue.
Atropis maritima Led. Sitka.
A. angustata Led. Kotzebue.
Glyceria aquatica Smith. Sitka.
G. glumaris Led. Sitka. Kotzebue.
Hierochloa borealis R. & S. "
H. alpina R. & S. "
Trisetum subspicatum Trin. "
T. sesquiflorum Trin. Unalashka.
T. cernuum Trin. Sitka.
Aira cæspitosa Trin. Unalashka.
Aira var. *Bottnica* Trin. Sitka.
A. arctica Trin. Sitka. Unalashka.
A. atropurpurea Scheele. Sitka. Unalashka.
Calamagrostis aleutica Trin. " "
C. purpurascens R. Br. Yukon.
C. strigosa Wahl. Sitka.
C. lapponica Trin. Unalashka.
C. neglecta Gært. Kotzebue Sound.
C. canadensis Beauv. " "
C. Langsdorfii Trin. " "
Arctagrostis latifolia Led. Kotzebue Sound.
Cinna latifolia Led. Sitka.
Agrostis æquivolvis Trin. Sitka.
A. exarata Trin. "
A. geminata Trin. Unalashka.
A. laxiflora R. Br. "

Phleum pratense L. Sitka.
P. alpinum L. Sitka. Kotzebue.
Alopecurus alpinus Sm. "

EQUISETACEÆ.

Equisetum arvense L. Sitka, northward.

FUNGI.

Erineum roseum Schultz. Norton Sound.

Several fungi which in warmer latitudes are deleterious are, in the northern portions of Alaska, eaten with impunity (among them *Agaricus mutabilis*, according to Dr. Kellogg).

ALGÆ.

Alaria esculenta Grev. Arctic and western coasts.

Other species of algæ are eaten by both Indians and Innuit, which I have no means of identifying.

NOTE. — The greater part of the above list is extracted from the Report of Dr. J. T. Rothrock, Botanist of the Scientific Corps of the Western Union Telegraph Expedition, Smithsonian Report for 1867, pp. 432–463.

APPENDIX H.

LIST OF WORKS CONTAINING INFORMATION IN REGARD TO ALASKA AND THE ADJACENT TERRITORIES.

ADELUNG.

Geschichte der Schiffahrten und Versuche welche zur Entdeckung des N. O. Weges nach Japan und China von verschiedenen Nationen unternomenen wurden, &c. Von Christoph Johann Adelung. 4to. Halle, 1768.

ALASKA HERALD, The. Edited semi-monthly by Agapius Honcharenko. San Francisco, March, 1868, &c.

ALEUTIAN ISLANDS, and their Inhabitants. St. Petersburg, 1845. (In Russian.)

ARCHÆOLOGIA AMERICANA, by the American Antiquarian Society. Cambridge, October, 1836.

ARCHIVES OF THE RUSSIAN AMERICAN COMPANY. Published by the Directors. St. Petersburg, 1862.

ATLANTIC MONTHLY. Boston, June, 1867. pp. 731 to 750.

BAER AND HELMERSEN.

Beiträge zur Kenntniss des Russischen Reiches und der angränzenden Länder Asien's. Auf Kosten der Kaiserlichen Akad. der Wissenschaften, herausgegeben von K. E. von Baer und Gr. von Helmersen. St. Petersburg, 1839.

BARÁNOFF.

Biography of Alexander Andréavich Baránoff. St. Petersburg, 1835. (In Russian.)

BARROW.

Chronological History of Voyages into the Arctic Regions. By John Barrow, F. R. S., &c. London, 1818.

BEECHEY.

Narrative of the Voyage of the Blossom to the Pacific and Behring Straits. By Captain F. W. Beechey. London, 1831.

BELCHER.

Narrative of the Voyage of H. M. S. Sulphur during the years 1836–1842. By Captain Sir Edward Belcher. London, 1843.

BELLIN.

Remarques sur le Carte de l'Amérique Septentrionale. Par M. Bellin. Paris, 1754.

BENYOWSKI.

Memoirs and Travels of Maurice Augustus, Count de Benyowski. Written by himself. London, 1790.

BERGH.

History and Chronology of the Discovery of the Aleutian Islands and of the Russian Fur Trade. By Vasili Bergh. St. Petersburg, 1823. (In Russian.)

The first Voyages undertaken by Russians to discover the Separation of Asia and America. By Vasili Bergh. St. Petersburg, 1858. (In Russian.)

BLASCHKE.

Topographia medica, Portus Novo Archangelensis. By Dr. Blaschke, Surgeon to the Russian American Company. St. Petersburg, 1842.

BROUGHTON.

Voyage of Discovery to the North Pacific Ocean and Round the World. By William R. Broughton. London, 1804. Two volumes, 4to, with Atlas.

BUCHANAN.

Sketches of the History, Manners, and Customs of the North-American Indians. By James Buchanan. London, 1824. 8vo.

BUESCHING.

Nachricht v. d. Russ. Entd. zwischen Asien und Europa, &c., aus dem St. Petersburger Hist. Geogr. Kalender für das Jahre 1781, übersetzt v. Consistorialrath Hase. And also, Mag. f. die neue Hist. und Geogr. Vol. XVI. Halle, 1782. 4to. pp. 235–286. Von Dr. Anton Friedrich Büsching.

BURNEY.

A Chronological History of Northeastern Voyages of Discovery, and of the early Eastern Navigations of the Russians. By Captain James Burney, F. R. S. London, 1819.

BUSCHMANN.

Die Sprache der Koloschen, in Abhandlungen der Königl. Ak. der Wissenschaften zu Berlin. pp. 376–432. Berlin, 1856.

CAMPBELL.

Voyage Round the World, &c., from 1808–1812. By Archibald Campbell. Edinburgh, 1816. 8vo.

CHAMISSO.

Reise um die Welt mit der Romanzoffischen Entdeckungs Expedition in den Jahren 1815–1818, auf der Brig Rurik, Capt. Otto von Kotzebue. By Adalbert von Chamisso. Leipzig, 1836.

CHLEBNIKOFF.

Notes on America, &c. By Alexie Chlebnikoff. (See Materials for the History of the Russian Colonies).

CHORIS.

Voyage pittoresque autour du Monde, &c. Folio. Paris, 1822.

CHRAMCHENKO. (See *Kramchenko.*)

CHRUSCHOFF. (See *Krushchoff.*)

CHWOSTOFF. (See *Davidoff.*)

COLLECTIONS OF THE MASSACHUSETTS HISTORICAL SOCIETY FOR 1804.

COLLINSON.

Proceedings of Captain Collinson, C. B., in H. M. S. Enterprise, Behring Strait Division of Arctic Search, 1851–1854. (Blue Book.)

COOK.

Voyage to the Pacific Ocean in the Years 1776–1780. By Captain James Cook. London, 1782, 1784, 1785.

COXE.

Account of the Russian Discoveries between Asia and America. London, 1780. By Rev. William Coxe. London, 1787.

Also by the same, A Comparative View of the Russian Discoveries with those of Captains Cook and Clerke.

DALL.

Die Telegraphen-Expedition auf dem Jukon in Alaska. Mit Karte. N. 19. By W. H. Dall. Petermann's Geographische Mittheilungen. 1869. Heft X. Gotha. Justus Perthes.

Remarks, &c. Boston Society of Natural History, Proceedings, Vol. X. November 4, 1868. Vol. XI. 1869.

Note on the Geology of Alaska. Silliman's American Journal of Science and Arts. January, 1868.

Remarks, October, 1868. Proceedings California Academy of Sciences. (Errors of reporter excepted.)

Observations on the Aurora Borealis, read before the National Academy of Sciences, Northampton, September, 1869.

Note on the Trend of the Rocky Mountains, north of Latitude 60°, and its Influence on Faunal Distribution; and

On the Distribution of the Aborigines of Alaska and adjacent Ter-

ritories. American Association for the Advancement of Science. Read before the Salem Meeting, August 20, 1869, by W. H. Dall.

Report, by W. H. Dall, on the Agricultural Resources of Alaska, (in) Report of United States Commissioner of Agriculture for 1868. Washington, 1869.

Observations on the Geology of Alaska (in the Coast Pilot of Alaska. See Davidson). Washington, 1869.

First Day on the Yukon. (In Old and New.) Boston, 1870. pp. 44–47.

DALL AND BANNISTER.

List of the Birds of Alaska, with Notes on their Habits and Distribution. By W. H. Dall and H. M. Bannister, A. M. Transactions of the Chicago Academy of Sciences, 1869.

DAVIDOFF.

Reise der Russischen Kaiserlichen Flott-officiere, Khwostow und Dawidow, von St. Petersburg durch Sibirien nach Amerika und zurück, in den Jahren 1802, 1803, 1804. Beschr. von Dawidow, und aus dem Russischen übersetzt von Dr. Karl Joh. Schultze. Berlin, 1816.

DAVIDSON.

Coast Pilot of Alaska. (First Part.) Southern Boundary to Cook's Inlet. By George Davidson, Assistant United States Coast Survey. Octavo. Government Printing Office, Washington, D. C., 1869. (Published by the Coast Survey).

DELISLE DE LA CROYÈRE.

Explication de la Carte des nouvelles Découvertes au Nord, &c. par Ph. Buache. Par Joseph Nicholas Delisle de la Croyère. Paris, 1752. 4to.

DE MOFRAS. Voyage Around the World in 1841–1842. By Duflot de Mofras. Paris, 1845.

DENYS.

Les Californies, l'Oregon, et les Possessions Russes en l'Amérique, les iles Noutka et de la Reine Charlotte. Par M. Ferdinand Denys (in L'Univers). Paris, 1849.

DIRECTORY FOR BEHRING'S SEA AND THE COAST OF ALASKA.

From Findlay's Directory of the Pacific Ocean, &c. United States Bureau of Navigation. Government Printing Office, Washington, 1869. 8vo.

DIXON.

Voyage Round the World, but more particularly to the Northwest

Coast of North America. By Captains Nathaniel Portlock and George Dixon. London, 1789.

DOROSCHIN.

Beobachtungen und Bemerkungen über das Gold-vorkommen in der Besitzung der Russ. Am. Com. nach dem Russischen des Herrn Freimann, &c. (Erman's Archives, Vol. XXV. pp. 229–237.) By P. Doroschin.

DOVE.

Ueber die Wärme-Abnahme in höheren Breiten. Zeitschr. f. Allgem. Erdkunde, p. 336. Von Herr Prof. Dove. Berlin, 1860.

DUNN.

History of the Oregon Territory and British North-American Fur Trade, &c. By John Dunn. London, 1844.

DU PETIT THOUARS.

Voyage of the French Frigate Venus. By M. Du Petit Thouars. Paris, 1837.

ENGELHARDT.

Russische Miscellen. St. Petersburg. Vol. I. pp. 28–69. 8vo.

ERMAN.

Beiträge zur Klimatologie des Russischen Reiches. Erster Abschnitt. Vol. I. p. 562, in Archiv für Wissen. Kunde von Russland. Her. von Adolph Erman. Berlin. 8vo. Also in the same, Vol. VI. p. 499 et seq. Vol. VII.; pp. 467–480, ibid.; pp. 480–512, p. 613 et seq., ibid. (On Zagoskin's Expedition, &c.)

ESPINOSA.

Memorias sobre las Observaciones astronomicas, &c., por los navigantes Españoles, &c., orderadas par Don Josef Espinosa y Tello. Madrid, 1809. Two volumes. 4to.

FEDIS.

L'Oregon et les Côtes de l'Océan Pacifique du Nord. Paris, 1848.

FINDLAY.

Directory for the Navigation of the Pacific Ocean. By A. G. Findlay. London, 1851.

FISCHER.

Siberische Geschichte von den Entdeckungen Siberien's, &c. Books III. and IV. St. Petersburg, 1768. 8vo.

FLEURIEU.

Voyage autour du Monde pendent les Années 1790–1792. Par É. Marchand; précédé d'une Introduction historique, avec Cartes et

Figures. Paris, l'an de Rep. VI. et VIII. Four volumes. 4to. Edited by C. P. Claret de Fleurieu.

FORSTER.

Geschichten der Reisen seit Cook auf den N. W. und N. O. Küsten von Amerika. Aus dem Englischen, by Georg Forster. Berlin, 1791. Three volumes. 4to.

History of the Voyages and Discoveries made in the North. Translated from the German of John Reinhold Forster, J. U. D. Dublin, 1786. With a Map.

FRANKLIN.

Narrative of a Second Expedition to the Shores of the Polar Sea, from 1825 to 1827. London, 1828. 4to.

FREDERICK.

Proceedings of Captain Charles Frederick, Commander H. M. S. Amphitrite, on a Visit to Behring Straits and Vicinity. 1852. (Blue Book.)

FREIMANN.

Bemerkungen über eine Reise von Sitcha durch die Besitzungen der H. B. Co., nach dem Russischen des Herrn Freimann. (Erman's Archives, Vol. VI., pp. 226–240.

FREYGANG.

Report to the Naval Bureau. By A. Freygang, captain of the 2d rank. St. Petersburg, 1868. Official Document.

GMELIN.

Reise durch Siberien. By Dr. Johann Georg Gmelin. Göttingen, 1767.

GOLÓFNIN.

Travels Round the World. (Russian.) By Basil Michaelovich Golófnin. St. Petersburg, 1822.

GOLOVÍN.

Review of the Russian American Colonies in 1861. By Paulus Nikolai-evich Golovín. Morski Sbornik, 1862.

GOVORLIFKI.

Report of G. Govorlifki, M. D., for 1860. Diary of the Department of the Interior, Division 2, Book I. St. Petersburg, 1861.

GREENHOW.

Memoir, Historical and Political, on the Northwest Coast of North America and the Adjacent Territories. By Robert Greenhow. (Senate Document, 174.) Washington, 1840.

History of Oregon and California and the other Territories on the Northwest Coast of North America. By Robert Greenhow. Second edition. Boston, 1845.

GREWINGK.

Beiträge zur Kenntniss der orographischen und geognostischen Beschaffenheit der Nordwest-Küste Amerikas mit den anliegenden Inseln. Von Dr. C. Grewingk. (With five Maps.) St. Petersburg, 1850. 8vo.

HARPER'S MAGAZINE. July, 1867, pp. 170–185. Also the same, Volume XXXVIII., 1869, p. 589.

HARTWIG.

The Polar World; Arctic and Antarctic Regions. By Dr. John Hartwig. London, 1869, and New York, 1869.

HAWAIIAN SPECTATOR. 1838 to 1840. Published at Honolulu, Sandwich Islands.

HOFMANN.

Geognostische Beobachtungen, gesammelt auf einer Reise um die Welt. (By) E. Hofmann. Berlin, 1829. 8vo.

HOLMBERG.

Ethnographische Skizzen über Völker des Russischen Amerika. Von H. J. Holmberg. Helsingfors, 1855.

HOOPER.

Ten Months among the Tents of the Túski, with Incidents of an Arctic Boat Expedition in Search of Sir John Franklin, as far East as the Mackenzie River and Cape Bathurst. By Lieutenant W. H. Hooper, R. N. (With a Map.) London, 1853.

HUMBOLDT.

Essai politique sur le Royaume de la Nouvelle Espagne. Par Alexander von Humboldt et Aimé Bonpland. Part III. Paris, 1811. 4to. pp. 328–350.

IMPORTATIONS OF THE HUDSON'S BAY COMPANY.

Published by the Directors of the Hudson's Bay Company. London, 1844.

INVALID RETSKI, No. 266. St. Petersburg, 1822. (Russian.)

JANOFFSKI.

Articles in the Russian Journal *Sin Otechestva*, for 1820–1821, 1839, and 1845. By Lieutenant Janoffski.

JOURNAL DES SAVANTS. Paris, 1817. (Contains documents relating to the life of Baránoff.)

JOURNAL OF THE DEPARTMENT OF THE INTERIOR.

Contains the Annual Reports of the Russian American Company. Official Documents. 1790? to 1862. St. Petersburg. (Russian.)

KASHEVÁROFF.

Note from A. P. Kashevároff, in *Morskoi Sbornik*, April and September, 1862. Also, Articles in the *St. Petersburgski Viedomati*, 1845, Nos. 190, 193, and the *Sin Otechestva*, 1839 and 1845.

KITTLITZ.

Vegetation of the Pacific. By F. H. Von Kittlitz. Translated by Dr. B. Seemann. London, 1861.

Travels in Micronesia, Russian America, and Kamchatka. (German, by the same.) Gotha, 1858.

KOSHKIN.

On the Kolosh Method of Hunting, &c. In the Journal of the Interior Department. St. Petersburg. (Russian.)

KOSTLITZEFF.

Notes on the Koloshes. In the same. (Russian.)

KOTZEBUE.

Voyage of Discovery into the South Sea and Behring Straits, for the Purpose of Exploring a Northeast Passage, in 1815 – 1818. By Lieutenant Otto von Kotzebue. Translated by H. E. Lloyd. London, 1821.

Voyage of the Brig Rurik in the Years 1815 – 1818. By Otto von Kotzebue. (German.) Weimar, 1821.

New Voyage Round the World, in the Years 1823 – 1826. By Otto von Kotzebue. London, 1830.

KRAMCHENKO.

Bruchstücke aus dem Reise-Journal des Herrn Kramchenko, &c. (in Krusenstern, Mém. Hydr., 1827, p. 108, and 1835, p. 98).

KRASHININIKOFF.

History of Kamchatka and the Kurilski Islands. By Steven Krashininikoff. Translated by Greve. Glocester, 1764.

KRENITZIN. (See Coxe, Appendix, and Pallas, Beiträge, Vol. I. pp. 249 – 272.)

KRUSCHOFF.

Voyage of the Sloop-of-War Apollo in 1821. (See Journal of the Navy Department. St. Petersburg. 1847. Russian.)

KRUSENSTERN.

Hydrographic Memoirs and Charts of the North Pacific. Published at Leipsic, 1819. St. Petersburg, 1824, 1827, and 1835.

Voyage to the Russian American Colonies, 1803 to 1806. By Admiral Von Krusenstern. St. Petersburg, 1812.

KUPFFER.

Observations Meteorologique, faites à l'Academie Imperiale des Sciences. By A. T. Kupffer. St. Petersburg, 1836. 4to.

LANGSDORF.

Voyages and Travels, 1803 to 1807. By G. H. v. Langsdorf. London, 1813.

Bemerkungen auf einer Reise um die Welt in den Jahren 1803–1807. Herr von Langsdorf. Frankfort, 1812.

LA PEROUSE.

Voyage Round the World. By Jean François de Galloup de La Perouse. London, 1799.

LA PLACE.

Campagne de Circumnavigation de la Frégate L'Artemis, pendant 1837, 1838, 1839, et 1840. Publié par l'Ordre du Gouvernement. Paris, 1854. (Six Parts.)

LASAREFF.

Voyage of the Sloop-of-War Ladoga, 1822–1824. By Captain M. P. Lasareff. St. Petersburg, 1832.

LEBRUN.

Abrégé de tous les Voyages au Pole Nord. Par M. Lebrun. Paris, 18–?

LENZ.

Ueber die Fluthwässer auf Sitcha. (Erman's Archives, Vol. III. p. 361.) Von E. Lenz.

LESSEPS.

Journal historique du Voyage de M. de Lesseps. Paris, 1790. 8vo. (See *La Perouse.*)

LEVASHEFF. (See Coxe, Appendix I., and Pallas, Nord. Beitr., pp. 249–272.)

LISIANSKY.

Voyage Round the World in the Ship Neva. By Urey Lisiansky, Captain, Russian Navy. London, 1814.

LÜTKÉ.

Voyage autour du Monde sur la Corvette Séniavine, dans les Années 1826 to 1829. By Captain Frederic Lütké. Paris, 1835.

MACKENZIE.

Voyages from Montreal over the Continent of North America to the Frozen and Pacific Oceans, in the Years 1780–1793. By Alexander Mackenzie. London, 1801. 4to. With Maps.

MAGUIRE.

Proceedings of Commander Rochefort Maguire, commanding H. M. S. Plover, in Vicinity of Behring Strait. And further Report of Proceedings to August, 1853. Also, Proceedings at Moore's Harbor, September, 1852, to August, 1853. Also, Proceedings during Second Winter passed at Point Barrow, 1853–54. (Blue Books.)

MARCHAND. (See *Fleurieu.*)

MATERIALS for the History of the Russian Colonies. Four Parts. 8vo. St. Petersburg. 1861. (Russian.)

MEARES.

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NOTES AND CORRECTIONS ON THE MAP.

As these sheets are leaving the press I am able to add the following notes. The examination of the original maps of the explorations of the Stikíne and Táhco Rivers, which were not accessible when this map was compiled, show some corrections to be necessary. The imperfections of the photographic map (No. 4) alluded to in the text, the only source of information then accessible, are chiefly the cause of the error. It must be remembered that the map here given is based upon approximate data to a large extent, and, as explorations multiply, much revision in the smaller details will be necessary. The principal and only important change now necessary is in regard to the head-waters of the Lewis, Stikíne, and Táhco Rivers. It appears that the true position of Fort Mumford is 57° 54′ N. Lat. and 131° 10′ W. Lon. from Greenwich. This brings the true course of the river into agreement with the observations of Professor W. P. Blake. The position of Lake Kennicott is 58° 30′ N. Lat. and 131° 43′ W. Lon.; it is fed by a hot spring; and of Lake Ketchum 58° 43′ N. Lat. and 131° 50′ W. Lon. Vátchee Lake, with the streams from several small lakes falling into it, proves to be the true head of the Lewis River, and is divided from the Táhco by a very low and narrow divide, some three miles only in width. The north and south forks of the Táhco join, in the main stream (in Lat. 59° 07′ N. and Lon. 133′ W. Greenwich), which turns abruptly to the west and south, and without doubt (though unexplored) enters Glacier Arm, where it is known as the Tákū River. All of this was incorrectly represented or omitted in the photographic map alluded to. Regretting that this correction is necessary, I am only glad that I have had the opportunity of correcting it here at the last moment, though not in the text itself. The remainder of the map, from the latest information, proves to be nearly correct, though future revision will no doubt be necessary.

The map having been printed before the spelling was revised, the following changes are desirable in the orthography of the names: —

For	Kinqequan	*read*	Kingégan.
"	Cape Krleougoune	"	Cape Krégugin.
"	Nounivak	"	Núnivak.
"	Youkon	"	Yúkon.
"	Katmay	"	Katmái.
"	Unalaska	"	Unaláshka.
"	Iliaminsk Pk.	"	Iliámna Peak.
"	Kuyck R.	"	Kneek R.
"	Chilcat	"	Chilkáht.*
"	C. St. Bartolom	"	C. St. Bartolómeo.
"	Chimsain Id.	"	Chimsyán Id.
"	Chacom	"	Chacón.
"	Etoline	"	Étolin.

N. B. — Cape St. Hermogenes is the south point of Marmot Island, near Kadiák.

* This more accurately represents the sound, according to Mr. Davidson.

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